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Nasopharyngeal Cancer Causes, Risk Factors, and Prevention

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

Risk Factors

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

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

Prevention

There's no way to prevent all nasopharyngeal cancers. But there are things you can do that might help lower your risk. Learn more.

- [Can Nasopharyngeal Cancer Be Prevented?](#)

Risk Factors for Nasopharyngeal Cancer

- [Sex](#)
- [Race/ethnicity and where you live](#)
- [Diet](#)
- [Age](#)
- [Epstein-Barr virus infection](#)
- [Human papillomavirus \(HPV\) infection](#)
- [Family history](#)
- [Other possible risk factors](#)

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

But risk factors don't tell us everything. Having a risk factor, or even many risk factors, does not mean that you will get the disease. And many people who get the disease may have few or no known risk factors.

Some of the risk factors that make a person more likely to develop nasopharyngeal cancer (NPC) include:

Sex

NPC is found in males two to three more times more often than it is in females.

Race/ethnicity and where you live

NPC is most common in Asia, specifically eastern and southern China (including Hong Kong), Singapore, Vietnam, and the Philippines. It's also fairly common in parts of North Africa and the Middle East, as well as the Arctic.

People of south China have a lower risk of NPC if they move to another area that has lower rates of NPC (like the US or Japan), but their risk is still higher than for people who are native to areas with lower risk. Over time, their risk seems to go down. The risk also goes down in new generations. Although White people born in the United States have a low risk of NPC, White people born in China have a higher risk.

Diet

People who live in parts of Asia, northern Africa, and the Arctic region where NPC is

common, typically eat diets very high in salt-cured fish and meat starting at an early age. The process of cooking the salted food seems to make chemicals, such as [nitrosamine](#)¹, which is a probable carcinogen. The rate of this cancer is dropping in southeast China and Singapore and it might partly be from people eating less of the salted fish. In contrast, some studies have suggested that diets high in nuts, legumes, fruits, and vegetables and low in dairy products and meat may help lower the risk of NPC.

Age

In areas of the world where NPC is not common, older age is a risk factor.

In places where NPC is more common, the cancer tends to be seen in younger people. For example, about 1 in 5 people with NPC are younger than 30 years old and the number of people diagnosed with NPC starts to go down after about age 59.

Epstein-Barr virus infection

Infection with the [Epstein-Barr Virus \(EBV\)](#)² is very common throughout the world, often occurring in children. In the United States, where infection with this virus tends to occur in teens, it's commonly known as mononucleosis or mono.

EBV infection has been linked to the development of NPC, as well as certain lymphomas. It is often found in the non-keratinizing, undifferentiated type of NPC. But infection alone with EBV is not enough to cause NPC, since infection with this virus is very common and this cancer is very rare. Other factors, such as a person's genes or smoking may affect how the body deals with EBV, which then may affect how EBV plays a part in the development of NPC.

EBV DNA can be found in NPC cells and also pre-cancer cells. EBV DNA can also be found in the blood of people with NPC.

The link between EBV infection and NPC is complex and still being studied.

Human papillomavirus (HPV) infection

Human papillomavirus (HPV) is a group of more than 150 types of viruses. Infection with certain types of HPV can cause some forms of cancer, including [cancers of the mouth and throat](#)³.

Some research shows that certain high-risk types of HPV may be linked to a small group of NPC cases especially in younger people who don't smoke.

See [HPV \(human papillomavirus\)](#)⁴ to learn more about HPV and vaccines to prevent HPV infection.

Family history

Family members of people with NPC are more likely to get this cancer. It's not known if this is because of inherited genes, shared environmental factors (such as the same diet or living quarters), or some combination of these.

Just as people have different blood types, they also have different tissue types. Studies have found that people with certain inherited tissue types have an increased risk of developing NPC. Tissue types affect immune responses, so this may be related to how a person's body reacts to EBV infection.

Other possible risk factors

Tobacco use: Many studies have found that [smoking](#)⁵ may contribute to the development of NPC. Smoking might increase the risk of NPC by reactivating an EBV infection.

Alcohol use: Some studies have also linked [heavy drinking](#)⁶ of alcohol to this type of cancer. This is seen more often in the US and Europe. More research is being done.

Hyperlinks

1. www.cancer.org/cancer/risk-prevention/understanding-cancer-risk/known-and-probable-human-carcinogens.html
2. www.cancer.org/cancer/risk-prevention/infections/infections-that-can-lead-to-cancer/viruses.html
3. www.cancer.org/cancer/types/oral-cavity-and-oropharyngeal-cancer.html
4. www.cancer.org/cancer/risk-prevention/hpv.html
5. www.cancer.org/cancer/risk-prevention/tobacco.html
6. www.cancer.org/cancer/risk-prevention/diet-physical-activity/alcohol-use-and-cancer.html

References

Du T, Chen K, Zheng S, Bao M, Huang Y, Wu K. Association Between Alcohol Consumption and Risk of Nasopharyngeal Carcinoma: A Comprehensive Meta-Analysis of Epidemiological Studies. *Alcohol Clin Exp Res*. 2019;43(11):2262-2273. doi:10.1111/acer.14184.

Feng R, Chang ET, Liu Q, et al. Intake of Alcohol and Tea and Risk of Nasopharyngeal Carcinoma: A Population-Based Case-Control Study in Southern China. *Cancer Epidemiol Biomarkers Prev*. 2021;30(3):545-553. doi:10.1158/1055-9965.EPI-20-1244.

Farrell PJ. Epstein-Barr Virus and Cancer. *Annu Rev Pathol*. 2019;14:29-53. doi:10.1146/annurev-pathmechdis-012418-013023.

Hui EP and Chan A. Epidemiology, etiology, and diagnosis of nasopharyngeal carcinoma. In: Shah S, ed. UpToDate. Waltham, Mass.: UpToDate, 2021. <https://www.uptodate.com>. Accessed June 2, 2021.

Kaidar-Person O, Gil Z, Billan S. Precision medicine in head and neck cancer. *Drug Resist Updat*. 2018;40:13-16. doi:10.1016/j.drug.2018.09.001.

Lee H.M., Okuda K.S., González F.E., Patel V. (2019) Current Perspectives on Nasopharyngeal Carcinoma. In: Rhim J., Dritschilo A., Kremer R. (eds) Human Cell Transformation. *Advances in Experimental Medicine and Biology*, vol 1164. Springer, Cham. https://doi.org/10.1007/978-3-030-22254-3_2.

Leeman JE, Katabi N, Wong RJ, Lee NY and Romesser PB. Ch. 65 - Cancer of the Head and Neck. In: Niederhuber JE, Armitage JO, Doroshow JH, Kastan MB, Tepper JE, eds. *Abeloff's Clinical Oncology*. 6th ed. Philadelphia, Pa. Elsevier; 2020.

Lin JH, Wen CP, Jiang CQ, et al. Smoking and nasopharyngeal cancer: individual data meta-analysis of six prospective studies on 334 935 men. *Int J Epidemiol*. 2021;50(3):975-986. doi:10.1093/ije/dyab060.

Long M, Fu Z, Li P, Nie Z. Cigarette smoking and the risk of nasopharyngeal carcinoma: a meta-analysis of epidemiological studies. *BMJ Open*. 2017;7(10):e016582. Published 2017 Oct 5. doi:10.1136/bmjopen-2017-016582.

Mendenhall WM, Dziegielewska PT, and Pfister DG. Chapter 45- Cancer of the Head and Neck. In: DeVita VT, Lawrence TS, Rosenberg SA, eds. *DeVita, Hellman, and Rosenberg's Cancer: Principles and Practice of Oncology*. 11th ed. Philadelphia, Pa:

Lippincott Williams & Wilkins; 2019.

National Cancer Institute. Nasopharyngeal Cancer Treatment (Adult) (PDQ)—Health Professional Version. August 30, 2019. Accessed at www.cancer.gov/types/head-and-neck/patient/adult/nasopharyngeal-treatment-pdq on May 9, 2022.

National Cancer Institute. Nasopharyngeal Cancer Treatment (Adult) (PDQ)—Patient Version. July 22, 2021. Accessed at www.cancer.gov/types/head-and-neck/patient/adult/nasopharyngeal-treatment-pdq on April 26, 2022.

National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Head and Neck Cancers, Version 2.2022 – April 26, 2022. Accessed at www.nccn.org/professionals/physician_gls/pdf/head-and-neck.pdf on April 26, 2022.

Turati F, Bravi F, Polesel J, et al. Adherence to the Mediterranean diet and nasopharyngeal cancer risk in Italy. *Cancer Causes Control*. 2017;28(2):89-95.

Yu MC, Ho JH, Lai SH, Henderson BE. Cantonese-style salted fish as a cause of nasopharyngeal carcinoma: report of a case-control study in Hong Kong. *Cancer Res*. 1986;46(2):956-961.

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What Causes Nasopharyngeal Cancer?

- [Epstein-Barr virus infection](#)
- [Eating certain foods](#)
- [Inherited Factors](#)

The exact cause of most cases of nasopharyngeal cancer (NPC) is not known. But scientists have found links with certain diets, infections, and inherited factors. (See [Risk Factors for Nasopharyngeal Cancer](#).)

Epstein-Barr virus infection

Scientists have studied how the Epstein-Barr virus (EBV) may cause cells in the nasopharynx to become cancer, but there's still a lot to learn. In developed countries,

most people infected with EBV have infectious mononucleosis (mono), and their immune system is able to recognize and destroy the virus. These people recover without any long-term problems. But in some cases, pieces of EBV DNA mix with the DNA of cells in the nasopharynx.

DNA is the chemical in each of our cells that makes up our genes, the instructions for how our cells work. For instance, we often look like our parents because they're the source of our DNA. But DNA affects more than how we look. Some genes contain instructions that control when cells grow and divide into new cells. Viruses like EBV also contain DNA. When a cell is infected with the EBV virus, the viral DNA may mix with the normal human DNA. Then the EBV DNA may tell the cells of the nasopharynx to divide and grow in an abnormal way. Still, EBV infection rarely leads to NPC, so other factors, such as smoking and genetic factors, probably play a role in whether or not it causes cancer.

Eating certain foods

Eating a diet high in salt-cured fish and meat seems to increase the ability of EBV to cause NPC. Studies show that foods preserved in this way may produce chemicals that can damage DNA. The damaged DNA then changes a cell's ability to control its growth and reproduction.

Inherited Factors

Some studies suggest that inheriting certain tissue types may contribute to a person's risk of developing NPC. Because the tissue type plays a role in the function of the immune system, some scientists suspect that an abnormal immune reaction to EBV infection may be involved. The details of how certain tissue types might increase NPC risk are still being worked out.

References

Hui EP and Chan A. Epidemiology, etiology, and diagnosis of nasopharyngeal carcinoma. In: Shah S, ed. *UpToDate*. Waltham, Mass.: UpToDate, 2021. <https://www.uptodate.com>. Accessed May 9, 2022.

Leeman JE, Katabi N, Wong RJ, Lee NY and Romesser PB. Ch. 65 - Cancer of the Head and Neck. In: Niederhuber JE, Armitage JO, Doroshow JH, Kastan MB, Tepper JE, eds. *Abeloff's Clinical Oncology*. 6th ed. Philadelphia, Pa. Elsevier; 2020.

National Cancer Institute. Nasopharyngeal Cancer Treatment (Adult) (PDQ)—Patient Version. July 22, 2021. Accessed at www.cancer.gov/types/head-and-neck/patient/adult/nasopharyngeal-treatment-pdq on April 26, 2022.

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Can Nasopharyngeal Cancer Be Prevented?

- [Avoid tobacco and alcohol](#)
- [Avoid certain infections](#)
- [Avoid certain foods](#)

There's no sure way to prevent nasopharyngeal cancer (NPC). But there are some things you can do that might lower your risk of getting NPC and other types of cancers.

Avoid tobacco and alcohol

Both tobacco and alcohol use have clearly been linked to many cancers, as well as other health problems. Since there appear to be some links between [tobacco](#)¹ and [heavy alcohol use](#)² with NPC, especially in the US, it might help to avoid these to lower a person's risk of NPC. Avoiding them in general can have many health benefits.

Avoid certain infections

Epstein-Barr virus (EBV)

Infection with EBV has been linked to NPC. Scientists are trying to make an EBV vaccine, but at this time there's no known way to prevent this infection.

Human papillomavirus (HPV)

Some research shows that certain high-risk types of HPV may be linked to a small group of NPC cases especially in younger people who don't smoke. Getting an HPV

vaccine and trying to avoid HPV infection might help prevent NPC and some forms of cancer, including cancers of the penis, cervix, vulva, vagina, anus, mouth, and throat.

See [HPV \(human papillomavirus\)](#)³ to learn more about HPV and vaccines to prevent HPV infection.

Avoid certain foods

Because eating certain types of foods, such as diets high in salt-cured fish, have been linked with NPC risk, eating less or not eating some types of food may lower the risk. This is especially true in parts of the world where NPC is common, such as southern China, northern Africa, and the Arctic region. Descendants of Southeast Asians who immigrated to the United States and eat a typical American diet, for example, have a lower risk of developing NPC. But these dietary factors are not thought to account for all cases of NPC in most other parts of the world.

Hyperlinks

1. www.cancer.org/cancer/risk-prevention/tobacco.html
2. www.cancer.org/cancer/risk-prevention/diet-physical-activity/alcohol-use-and-cancer.html
3. www.cancer.org/cancer/risk-prevention/hpv.html

References

Cui X, Snapper CM. Epstein Barr Virus: Development of Vaccines and Immune Cell Therapy for EBV-Associated Diseases. *Front Immunol*. 2021;12:734471. Published 2021 Oct 8. doi:10.3389/fimmu.2021.734471.

Du T, Chen K, Zheng S, Bao M, Huang Y, Wu K. Association Between Alcohol Consumption and Risk of Nasopharyngeal Carcinoma: A Comprehensive Meta-Analysis of Epidemiological Studies. *Alcohol Clin Exp Res*. 2019;43(11):2262-2273. doi:10.1111/acer.14184.

Farrell PJ. Epstein-Barr Virus and Cancer. *Annu Rev Pathol*. 2019;14:29-53. doi:10.1146/annurev-pathmechdis-012418-013023.

Hui EP and Chan A. Epidemiology, etiology, and diagnosis of nasopharyngeal carcinoma. In: Shah S, ed. UpToDate. Waltham, Mass.: UpToDate, 2021.

<https://www.uptodate.com>. Accessed May 3, 2022.

Kaidar-Person O, Gil Z, Billan S. Precision medicine in head and neck cancer. *Drug Resist Updat*. 2018;40:13-16. doi:10.1016/j.drug.2018.09.001.

Leeman JE, Katabi N, Wong RJ, Lee NY and Romesser PB. Ch. 65 - Cancer of the Head and Neck. In: Niederhuber JE, Armitage JO, Doroshow JH, Kastan MB, Tepper JE, eds. *Abeloff's Clinical Oncology*. 6th ed. Philadelphia, Pa. Elsevier; 2020.

Lin JH, Wen CP, Jiang CQ, et al. Smoking and nasopharyngeal cancer: individual data meta-analysis of six prospective studies on 334 935 men. *Int J Epidemiol*. 2021;50(3):975-986. doi:10.1093/ije/dyab060.

Long M, Fu Z, Li P, Nie Z. Cigarette smoking and the risk of nasopharyngeal carcinoma: a meta-analysis of epidemiological studies. *BMJ Open*. 2017;7(10):e016582. Published 2017 Oct 5. doi:10.1136/bmjopen-2017-016582.

Ozoya OO, Sokol L, Dalia S. EBV-Related Malignancies, Outcomes and Novel Prevention Strategies. *Infect Disord Drug Targets*. 2016;16(1):4-21. 2017-016582.

Rühl J, Leung CS, Münz C. Vaccination against the Epstein-Barr virus. *Cell Mol Life Sci*. 2020;77(21):4315-4324. doi:10.1007/s00018-020-03538-3.

Smets F, Sokal EM. Prevention and treatment for Epstein-Barr virus infection and related cancers. *Recent Results Cancer Res*. 2014;193:173-190.

Turati F, Bravi F, Polesel J, et al. Adherence to the Mediterranean diet and nasopharyngeal cancer risk in Italy. *Cancer Causes Control*. 2017;28(2):89-95.

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