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About Nasal Cavity and Paranasal Sinus Cancer

Overview and Types

If you've been diagnosed with nasal cavity or paranasal sinus cancer or are worried about it, you likely have a lot of questions. Learning some basics is a good place to start.

- [What Are Nasal Cavity and Paranasal Sinus Cancers?](#)

Research and Statistics

See the latest estimates for new cases of nasal cavity and paranasal sinus cancers in the US and what research is currently being done.

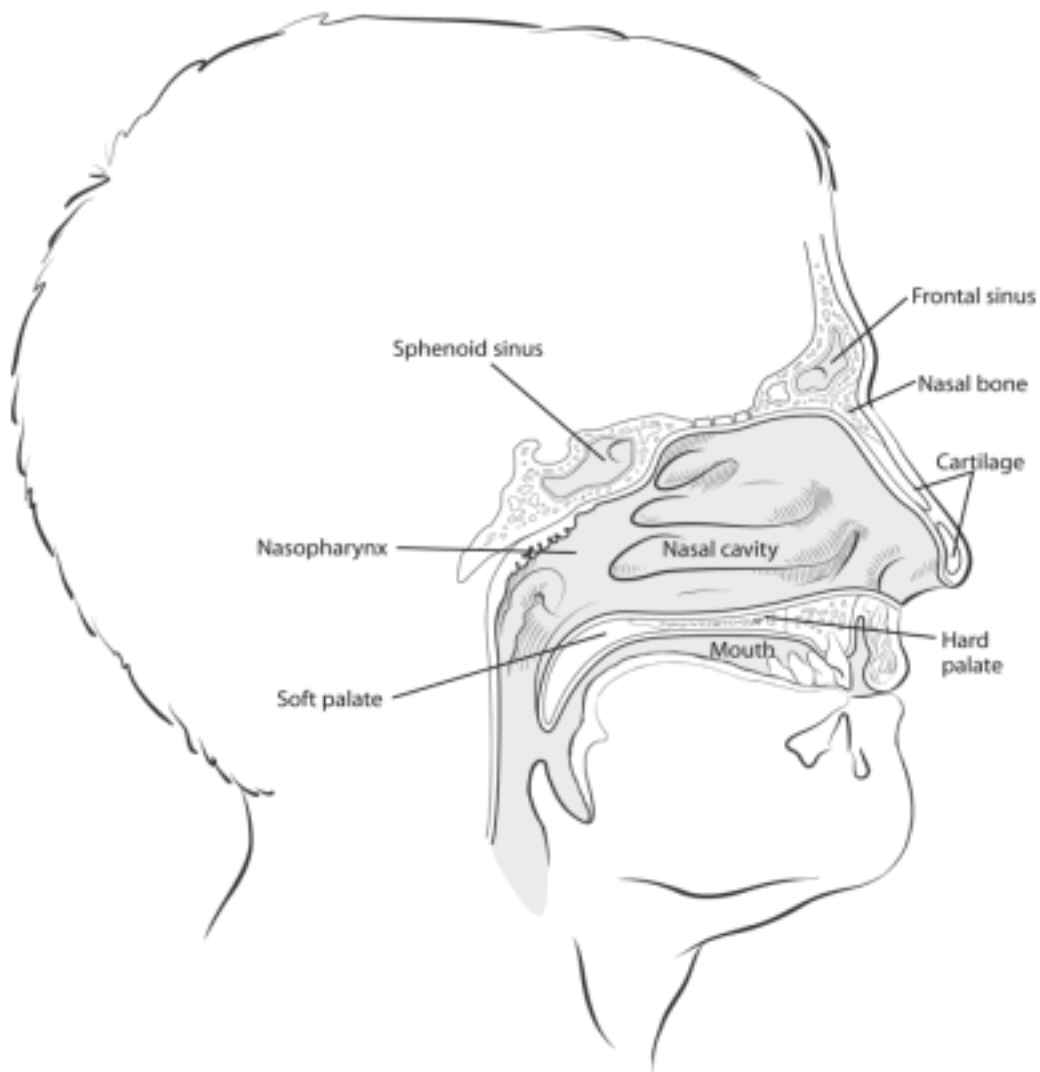
- [What Are the Key Statistics About Nasal Cavity and Paranasal Sinus Cancers?](#)
- [What's New in Nasal Cavity and Paranasal Sinus Cancer Research and Treatment?](#)

What Are Nasal Cavity and Paranasal Sinus Cancers?

To understand these cancers, it helps to know a little about the nasal cavity and

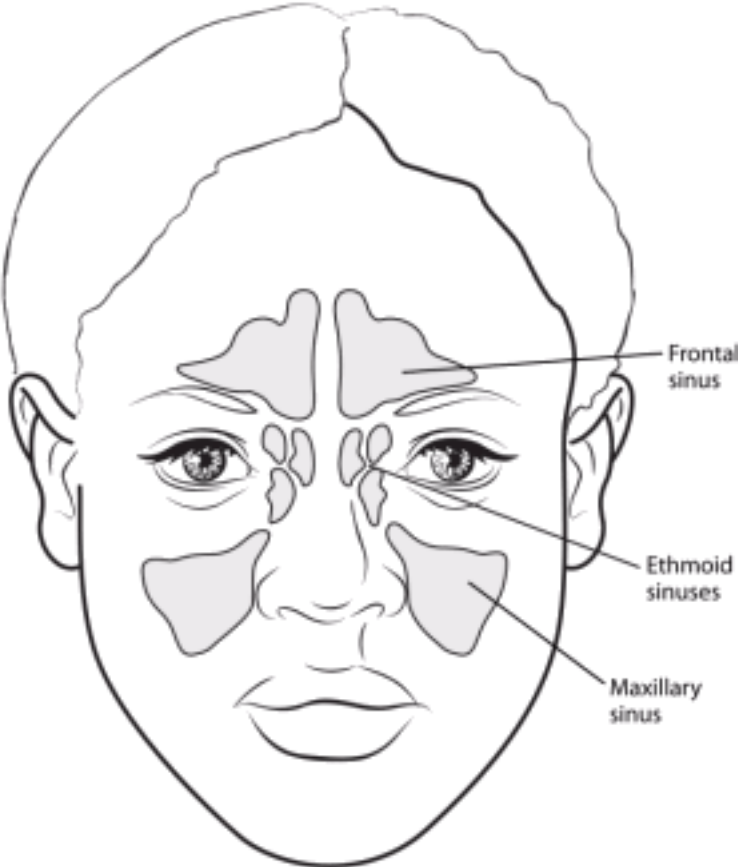
paranasal sinuses.

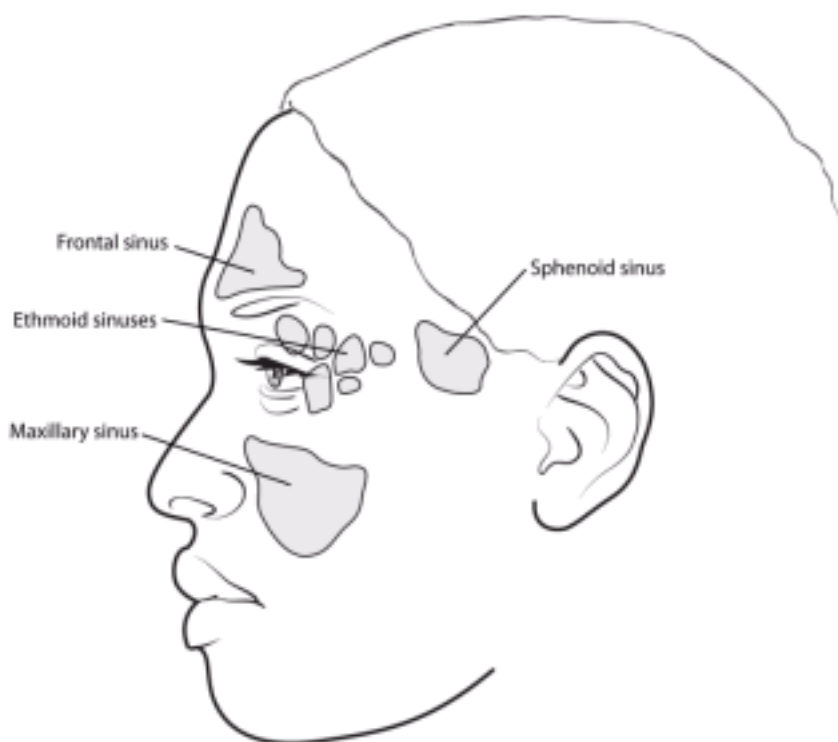
The nasal cavity



The nose opens into the nasal passageway, or cavity. This cavity is a space that runs along the top of the roof of the mouth (the palate, which separates your nose from your mouth) and then turns downward to join the passage from the mouth to the throat.

The paranasal sinuses





Sinuses are cavities (spaces) or small tunnels. They are called **paranasal** because they're around or near the nose. The nasal cavity opens into a network of sinuses:

- **Maxillary sinuses** are in the cheek area, below the eyes on either side of the nose.
- **Frontal sinuses** are above the inner eye and eyebrow area.
- **Sphenoid sinuses** sit deep behind the nose, between the eyes.
- **Ethmoid sinuses** are made up of many sieve-like sinuses formed of thin bone and mucous tissues. They're above the nose, between the eyes.

The sinuses are filled with air. When you have a cold or sinus infection the sinuses can become blocked (obstructed) and fill with mucus and pus, which can be uncomfortable.

The nasal cavity and paranasal sinuses do many things:

- They help filter, warm, and moisten the air you breathe.
- They give your voice resonance.
- They lighten the weight of the skull.
- They provide a bony framework for the face and eyes.

The nasal cavity and the paranasal sinuses are lined by a layer of mucus-producing tissue (mucosa). The mucosa has many types of cells, including:

- **Squamous epithelial cells**, which are flat cells that line the sinuses and make up most of the mucosa
- **Glandular cells** such as minor salivary gland cells, which make mucus and other fluids
- **Nerve cells**, which are responsible for sensation and the sense of smell in the nose
- **Infection-fighting cells** (which are part of the immune system), blood vessel cells, and other supporting cells

Other types of cells in the nasal cavity and paranasal sinuses, including bone and cartilage cells, can also become cancer.

Nasal cavity and paranasal sinus cancers

Any of the cells that make up the mucosa can become cancer, and each type of cancer behaves or grows differently.

- Squamous epithelial cells can become **squamous cell carcinomas**. This is the most common type of cancer in the nasal cavity and paranasal sinuses. It makes up a little over half of cancers of these areas.
- Minor salivary gland cells can turn into **adenocarcinomas**, **adenoid cystic carcinomas**, and **mucoepidermoid cancers**. These also are common nasal and paranasal sinus cancers.
- **Undifferentiated carcinoma** is another type of cancer that can come from mucosa cells. This is a fast-growing cancer in which the cells look so abnormal that it's hard to tell what type of cell the cancer started in.
- Cells that give the skin its tan or brown color are called melanocytes. [Melanoma](#)¹ is a type of cancer that starts in these cells. It can grow and spread quickly. These cancers usually are found on sun-exposed areas of the skin but can form on the lining of the nasal cavity and sinuses or other areas inside the body.
- **Esthesioneuroblastoma** is a cancer that starts in the olfactory nerve (the nerve for the sense of smell). This cancer is also called **olfactory neuroblastoma**. It usually starts in the roof of the nasal cavity and involves a structure called the cribriform plate. The cribriform plate is a bone deep in the skull, between the eyes, and above the ethmoid sinuses. These tumors can sometimes be mistaken for other types of

tumors, like undifferentiated carcinoma or [lymphoma](#)².

- **Lymphomas** (cancers starting in immune system cells called lymphocytes) can occur in the nasal cavity and paranasal sinuses. One type of lymphoma seen in this area, T-cell/natural killer cell nasal-type lymphoma, was previously called lethal midline granuloma. See [Non-Hodgkin Lymphoma](#)³ for information about the diagnosis and treatment of lymphomas.
- **Sarcomas** are cancers of muscle, bone, cartilage, and fibrous cells that can start anywhere in the body, including the nasal cavity and paranasal sinuses. Information about [sarcomas](#)⁴ can be found on some of our other pages.

Each of these types of cancer has a distinct behavior and outlook. They cannot all be treated the same way. Many of them rarely affect the nasal cavity and paranasal sinuses, so they've been hard to study. Because of this, doctors must base treatment decisions on their experience with similar cancers in other parts of the head and neck.

Other growths found in the nasal cavity and paranasal sinuses

Some growths in the nasal cavity and paranasal sinuses are not cancers, but they could still cause problems.

Nasal polyps

Nasal polyps are abnormal growths inside the nasal cavity or paranasal sinuses. Polyps usually have a teardrop shape and a smooth surface. Most nasal polyps are benign (not cancer) and are caused by some type of chronic (long-lasting) inflammation in the nose. Using exams and tests, doctors can often tell benign polyps from cancer. But in some cases, polyps need to be closely checked to be sure. Small polyps that aren't causing problems might not need treatment. Larger polyps that cause problems might need to be treated with medicine or surgery.

Papillomas

Papillomas are warts that can grow inside the nasal cavity or paranasal sinuses and destroy healthy tissue. They usually have a bumpy surface. Papillomas are not cancer, but sometimes a squamous cell carcinoma will start in a papilloma. Because of the risk of cancer, papillomas in the nasal cavity and paranasal sinuses are removed by surgery.

Inverting papilloma. This is a type of papilloma that is classified as a benign tumor, but

it tends to act more like a cancer. It tends to recur (come back) and can grow into nearby tissues. Inverted papillomas are often treated with the same type of surgery that's used for cancer.

Hyperlinks

1. www.cancer.org/cancer/melanoma-skin-cancer.html
2. www.cancer.org/cancer/lymphoma.html
3. www.cancer.org/cancer/non-hodgkin-lymphoma.html
4. www.cancer.org/cancer/soft-tissue-sarcoma.html

References

See all references for Nasal Cavity and Paranasal Sinus Cancers
(www.cancer.org/cancer/nasal-cavity-and-paranasal-sinus-cancer/references.html)

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What Are the Key Statistics About Nasal Cavity and Paranasal Sinus Cancers?

Cancers of the nasal cavity and paranasal sinuses are rare, with about 2,000 people in the United States developing these cancers each year.

These tumors are more common with age, with about 4 out of 5 cases occurring in people who are at least 55 years old.

Men are more likely than women to get these cancers. They occur much more often in certain areas of the world such as Japan and South Africa.

Most cancers of the nasal cavity and paranasal sinuses occur in the maxillary sinuses or in the nasal cavity. They are less common in the ethmoid sinuses, and are rare in the frontal and sphenoid sinuses.

Survival statistics for these cancers are discussed in the section [Survival Rates for Nasal Cavity and Paranasal Sinus Cancers, by Stage](#).¹

Hyperlinks

1. www.cancer.org/cancer/nasal-cavity-and-paranasal-sinus-cancer/detection-diagnosis-staging/survival-rates.html

References

See all references for Nasal Cavity and Paranasal Sinus Cancers (www.cancer.org/cancer/nasal-cavity-and-paranasal-sinus-cancer/references.html)

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What's New in Nasal Cavity and Paranasal Sinus Cancer Research and Treatment?

Research on prevention of and better treatment for [nasal cavity and paranasal sinus cancers](#)¹ is now being done at many medical centers, university hospitals, and other institutions across the nation. Doctors and patients are urged to contact the nearest cancer center to find out what [clinical trials](#)² are going on in their community.

Genetics

Little is known about the [gene changes](#)³ in nasal cavity and paranasal sinus cancer because this cancer is so rare. Still, scientists have found some changes in the genes of some head and neck cancer cells that may be what change normal cells into cancer cells. But more research is needed to clearly identify these changes and link them to nasal cavity and nasopharyngeal cancers.

Understanding these gene changes may help doctors find better ways to diagnose

these cancers. It may also lead to treatments that work better and have fewer side effects than those used today.

Treatment

Surgery

Surgeons are looking at new ways to [remove these cancers](#)⁴ while doing as little damage as possible to nearby normal tissues. Researchers are also looking for better ways to combine surgery with other cancer treatments to get better outcomes.

Selective [lymph node dissection](#)⁵ is another research interest. Studies have suggested that even patients who do not appear to have cancer in their [lymph nodes](#)⁶ have better outcomes when surgery is done to check the nodes close to the cancer compared to patients who have no lymph node treatment or elective neck radiation. More research is needed to know which patients should be offered these options.

Studies are looking at the possibility of [reconstruction](#)⁷, or rebuilding the effected bony parts of the face, and how to best do it. Bone and tissue grafts, as well as man-made materials are being studied.

Radiation therapy

Doctors are always looking better ways to focus [radiation](#)⁸ on tumors more precisely to get more radiation to the tumor while limiting damage to nearby areas. This is especially important for head and neck tumors like nasal cavity and paranasal sinus cancers, where there are many important structures (like the eyes and brain), blood vessels, and nerves close to the tumor.

Research looking at whether [proton therapy](#)⁹ (which uses proton beams instead of x-rays) could work better than IMRT. ([IMRT](#)¹⁰ is the type of radiation most often used today.) Proton therapy could allow doctors to give higher doses of radiation to the cancer with less damage to the tissues the rays pass through. This might also cause fewer side effects, like mouth pain, eating problems, and weight loss.

Different radiation schedules are also being studied. For instance, instead of giving one large dose of radiation each day, there may be less damage to the eyeball and optic nerve if radiation is split into 2 smaller doses each day. This is called **hyperfractionation** and needs to be studied more.

Improvements in radiation have also led doctors to test repeating radiation treatments

for cancers that come back after the initial course of treatment.

Chemotherapy

Doctors are looking at how [chemotherapy](#)¹¹ can be used with other treatments to improve outcomes, especially for bigger cancers that may have already spread. Induction chemotherapy -- chemo given before surgery and/or radiation -- is of special interest because studies suggest that it may help preserve the eyeball in people with advanced disease. It's also been linked to longer survival.

Intra-arterial chemo (putting drugs right into the blood vessels feeding the tumor) for advanced cancers is another area of interest. Research has suggested that this might help reduce damage to the nearby tissues -- especially the eyeball. Still, there are a lot of side effects seen with this treatment, and more research is needed to know if it helps.

More research is needed to know when to use chemotherapy and which chemo drug combinations are best for these cancers.

Targeted therapies

Clinical trials are studying several [targeted therapies](#)¹² that block the action of the substances (such as growth factors and growth factor receptors) that cause head and neck cancers to grow and spread. Cetuximab is already used in some cases, and pembrolizumab and bevacizumab are also being studied. Many studies are testing combinations of targeted therapies plus chemo or radiation. As has been the case with many other kinds of cancer, targeted therapies may prove to be a great advancement in the treatment of nasal cavity and paranasal sinus cancers.

PDT

[Photodynamic therapy](#)¹³ or PDT uses drugs and light to treat small cancers that can be reached with lasers. Researchers are looking at how this treatment might be used to treat recurrent [esthesioneuroblastoma](#) and other paranasal sinus tumors that come back after treatment.

Because nasal cavity and paranasal sinus cancers are rare, nearly all clinical trials include patients with other types of head and neck cancer as well. Although these studies are not specific to nasal cavity and paranasal sinus cancers, doctors will be able to apply the results when choosing treatment for patients with nasal cavity and paranasal sinus cancers.

Hyperlinks

1. www.cancer.org/cancer/nasal-cavity-and-paranasal-sinus-cancer.html
2. www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html
3. www.cancer.org/cancer/cancer-causes/genetics/genes-and-cancer.html
4. www.cancer.org/cancer/nasal-cavity-and-paranasal-sinus-cancer/treating/surgery.html
5. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/surgery/how-surgery-is-used-for-cancer.html
6. www.cancer.org/cancer/cancer-basics/lymph-nodes-and-cancer.html
7. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/surgery/how-surgery-is-used-for-cancer.html
8. www.cancer.org/cancer/nasal-cavity-and-paranasal-sinus-cancer/treating/radiation-therapy.html
9. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/radiation/external-beam-radiation-therapy.html
10. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/radiation/external-beam-radiation-therapy.html
11. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/chemotherapy.html
12. www.cancer.org/cancer/nasal-cavity-and-paranasal-sinus-cancer/treating/targeted-therapy.html
13. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/photodynamic-therapy.html

References

See all references for Nasal Cavity and Paranasal Sinus Cancers
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Andratschke M, Hagedorn H. First results of frontal sinus obliteration with a synthetic, resorbable and osteoconductive bone graft of β -tricalcium phosphate. *J Laryngol Otol.* 2017;131(6):534-540.

Bossi P, Farina D, Gatta G, et al. Paranasal sinus cancer. *Crit Rev Oncol Hematol.* 2016;98:45-61.

Caesar L, van Doeveren TE, Tan IB, et al. The use of photodynamic therapy as

adjuvant therapy to surgery in recurrent malignant tumors of the paranasal sinuses. *Photodiagnosis Photodyn Ther.* 2015;12(3):414-421.

Castelnau-Marchand P, Levy A, Moya-Plana A, et al. Sinonasal squamous cell carcinoma without clinical lymph node involvement : Which neck management is best? *Strahlenther Onkol.* 2016;192(8):537-544.

Dagan R, Bryant C, Li Z, et al. Outcomes of Sinonasal Cancer Treated With Proton Therapy. *Int J Radiat Oncol Biol Phys.* 2016;95(1):377-385.

Kashat L, Le CH, Chiu AG. The Role of Targeted Therapy in the Management of Sinonasal Malignancies. *Otolaryngol Clin North Am.* 2017;50(2):443-455.

McDonald MW, Liu Y, Moore MG, Johnstone PA. Acute toxicity in comprehensive head and neck radiation for nasopharynx and paranasal sinus cancers: cohort comparison of 3D conformal proton therapy and intensity modulated radiation therapy. *Radiat Oncol.* 2016;11:32.

National Comprehensive Cancer Network. NCCN Clinical Practice Guidelines in Oncology. Head and Neck Cancers. Version 2.2017 -- May 8, 2017.

Ock CY, Keam B, Kim TM, et al. Induction chemotherapy in head and neck squamous cell carcinoma of the paranasal sinus and nasal cavity: a role in organ preservation. *Korean J Intern Med.* 2016;31(3):570-578.

Pirrone C, Chiaravalli AM, Marando A, et al. OTX1 and OTX2 as possible molecular markers of sinonasal carcinomas and olfactory neuroblastomas. *Eur J Histochem.* 2017;61(1):2730.

Scangas GA, Eloy JA, Lin DT. The Role of Chemotherapy in the Management of Sinonasal and Ventral Skull Base Malignancies. *Otolaryngol Clin North Am.* 2017;50(2):433-441.

Wang K, Zanation AM, Chera BS. The Role of Radiation Therapy in the Management of Sinonasal and Ventral Skull Base Malignancies. *Otolaryngol Clin North Am.* 2017;50(2):419-432.

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