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.

- Key Statistics About Nasal Cavity and Paranasal Sinus Cancers
- What’s New in Nasal Cavity and Paranasal Sinus Cancer Research?

What Are Nasal Cavity and Paranasal Sinus Cancers?

Nasal cavity and paranasal sinus cancers are types of head and neck cancers. Head and neck cancers\(^1\) can have many different names depending on where the cancer
starts. Cancer starts when cells in the body begin to grow out of control.

- **Nasal cavity** cancers start in the opening behind the nose
- **Paranasal sinus** cancers start in the air-filled spaces in the skull around or near the nose

Both types are covered here because these 2 structures are close to each other.

Since the head and neck area has so many organs in a small place, knowing what type of head and neck cancer you have can be confusing. Ask your doctor to write down the exact kind of cancer you have and show you where it is on a picture. To learn more about how cancer starts and spreads, see What Is Cancer?\(^2\)

**The nasal cavity**

The nose opens into the nasal 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 slightly downward to join the nasopharynx (the upper part of the throat).

**The paranasal sinuses**

Sinuses are small air-filled spaces in the bones that are connected to the nasal cavity. They are called paranasal because they are around the nose. The different sinuses are named depending on which bones they are in:

- **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 above the nose, between the eyes.

The sinuses are normally filled with air. When you have a cold or sinus infection the sinuses can become blocked (obstructed) and filled with mucus and pus, which can be uncomfortable. This mucous can drain from your sinuses into your nasal cavity.

To see more details of the nasal cavity and paranasal sinuses, explore the 3D interactive color model.
The nasal cavity and paranasal sinuses do many things:

- They help filter, warm, and moisten the air you breathe.
- They give your voice resonance (sound).
- 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 (being able to feel) 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.

**Types of nasal cavity and paranasal sinus cancers**

Cancer can start from any type of cell that makes up the mucosa, and each type of cancer acts and grows differently.

- Squamous epithelial cells can become **squamous cell carcinomas (squamous cell cancer)**. 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 are the second most common nasal and paranasal sinus cancers.
- **Undifferentiated carcinoma** (undifferentiated cancer) of the nasal cavity or paranasal sinuses is a very fast-growing cancer and 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** 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**.

- **Lymphomas** (cancers starting in immune system cells called lymphocytes) can occur in the nasal cavity and paranasal sinuses and are the third most common cancer found in this area. One type of lymphoma seen in this area, T-cell/natural killer cell nasal-type lymphoma, was previously called midline lethal granuloma. See [Non-Hodgkin Lymphoma](#) 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](#) 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. 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. Polyps usually have a teardrop shape and a smooth surface. 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.

Inverted papilloma. This type of papilloma grows inward and into the underlying bone. Even though an inverted papilloma is classified as a benign tumor, locally it can act aggressively like a cancer. It tends to recur (come back) and can become cancer. Inverted papillomas are often treated with the same type of surgery that's used for cancer.

Hyperlinks


References


Key Statistics About Nasal Cavity and Paranasal Sinus Cancers

How common is nasal cavity and paranasal sinus cancer?

Cancers of the nasal cavity and paranasal sinuses are rare, and make up about 3% to 5% of all head and neck cancers\(^1\) in the United States.

What is the most common type of nasal cavity or paranasal sinus cancer?

Most cancers in the nasal cavity and paranasal sinuses are squamous cell cancers.

Who gets cancer of the nasal cavity or paranasal sinus?

About 4 out of 5 cases occur in people who are 55 years old or older.

In the US, White people are much more likely to develop these cancers than Black people, and men are about twice more likely than women to get these cancers. These cancers occur much more often in certain areas of the world such as Denmark.

Where are nasal cavity and paranasal sinus cancers found?

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 covered in the section Survival Rates for Nasal Cavity and Paranasal Sinus Cancers, by Stage.\(^2\)

Hyperlinks


References
What’s New in Nasal Cavity and Paranasal Sinus Cancer Research?

Research on prevention of and better treatment for nasal cavity and paranasal sinus cancers is now being done at many medical centers, university hospitals, and other institutions across the nation.
Genetics

Little is known about the gene changes\textsuperscript{1} 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 related to the change of normal cells to cancer cells. But more research is needed to identify these changes clearly and link them to nasal cavity and paranasal sinus cancers.

Understanding these gene changes may help 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.

For example, a new type of cancer has been found in the nasal cavity and paranasal sinuses called NUT carcinoma (cancer). NUT stands for the \textit{NUTM1} gene that is abnormal and causes this type of cancer that mostly grows in the nasal cavity and paranasal sinuses. Studies are being done to see if certain targeted drugs might be used against this abnormal gene.

Treatment

Surgery

Surgeons are looking at new ways to remove these cancers\textsuperscript{2} 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.

Studies are looking at ways to reconstruct\textsuperscript{3}, or rebuild the affected bony parts of the face, and how to best do it. Bone and tissue grafts, as well as man-made materials are being looked at.

Radiation therapy

Doctors are always looking for better ways to focus radiation\textsuperscript{4} 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.

Intensity modulated radiation therapy or IMRT is the type of radiation most often used today to treat nasal cavity or paranasal sinus cancers. Research is showing that proton therapy (which uses proton beams instead of x-rays) could work as well as IMRT.
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. Proton therapy or IMRT can be used to treat these cancers, but more studies are needed with proton therapy to evaluate long-term side effects. Also, proton therapy is not available everywhere.

Different radiation schedules are also being studied. For instance, instead of giving one large dose of radiation each day, the cancer might be better controlled with the same dose of radiation given 6 days a week instead of 5, over a shorter period of time. This is called accelerated fractionation and needs to be studied more.

Improvements in radiation have also led doctors to test giving radiation in the same area for cancers that come back after the initial course of treatment.

**Chemotherapy**

Doctors are looking at how chemotherapy 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 save the eyeball in people with advanced disease. It's also been linked to longer survival. Studies are also looking at whether giving chemotherapy regularly after surgery (adjuvant chemotherapy) is helpful in keeping the cancer from coming back (recurring).

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

**Targeted drug therapy**

Clinical trials are studying several targeted therapies 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. 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 treating nasal cavity and paranasal sinus cancers.

**Immunotherapy**

Immunotherapy has been studied more in other types of head and neck cancer, such as laryngeal and hypopharyngeal cancers. There is not much information on their use for nasal cavity or paranasal sinus cancers since they are rare. More research is being
done to better understand immunotherapy drugs in these specific cancers.

**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 often apply the results when choosing treatment for patients with nasal cavity and paranasal sinus cancers. Contact the nearest cancer center to find out what clinical trials are being done in your community.**

**Hyperlinks**


**References**


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