



# Nasopharyngeal Cancer

## What is cancer?

The body is made up of trillions of living cells. Normal body cells grow, divide, and die in an orderly fashion. During the early years of a person's life, normal cells divide faster to allow the person to grow. After the person becomes an adult, most cells divide only to replace worn-out or dying cells or to repair injuries.

Cancer begins when cells in a part of the body start to grow out of control. There are many kinds of cancer, but they all start because of out-of-control growth of abnormal cells.

Cancer cell growth is different from normal cell growth. Instead of dying, cancer cells continue to grow and form new, abnormal cells. Cancer cells can also invade (grow into) other tissues, something that normal cells cannot do. Growing out of control and invading other tissues are what makes a cell a cancer cell.

Cells become cancer cells because of damage to DNA. DNA is in every cell and directs all its actions. In a normal cell, when DNA gets damaged the cell either repairs the damage or the cell dies. In cancer cells, the damaged DNA is not repaired, but the cell doesn't die like it should. Instead, this cell goes on making new cells that the body does not need. These new cells will all have the same damaged DNA as the first cell does.

People can inherit damaged DNA, but most DNA damage is caused by mistakes that happen while the normal cell is reproducing or by something in our environment. Sometimes the cause of the DNA damage is something obvious, like cigarette smoking. But often no clear cause is found.

In most cases the cancer cells form a tumor. Some cancers, like leukemia, rarely form tumors. Instead, these cancer cells involve the blood and blood-forming organs and circulate through other tissues where they grow.

Cancer cells often travel to other parts of the body, where they begin to grow and form new tumors that replace normal tissue. This process is called metastasis. It happens when the cancer cells get into the bloodstream or lymph vessels of our body.

No matter where a cancer may spread, it is always named for the place where it started. For example, breast cancer that has spread to the liver is still called breast cancer, not liver cancer. Likewise, prostate cancer that has spread to the bone is metastatic prostate cancer, not bone cancer.

Different types of cancer can behave very differently. For example, lung cancer and breast cancer are very different diseases. They grow at different rates and respond to different treatments. That is why people with cancer need treatment that is aimed at their particular kind of cancer.

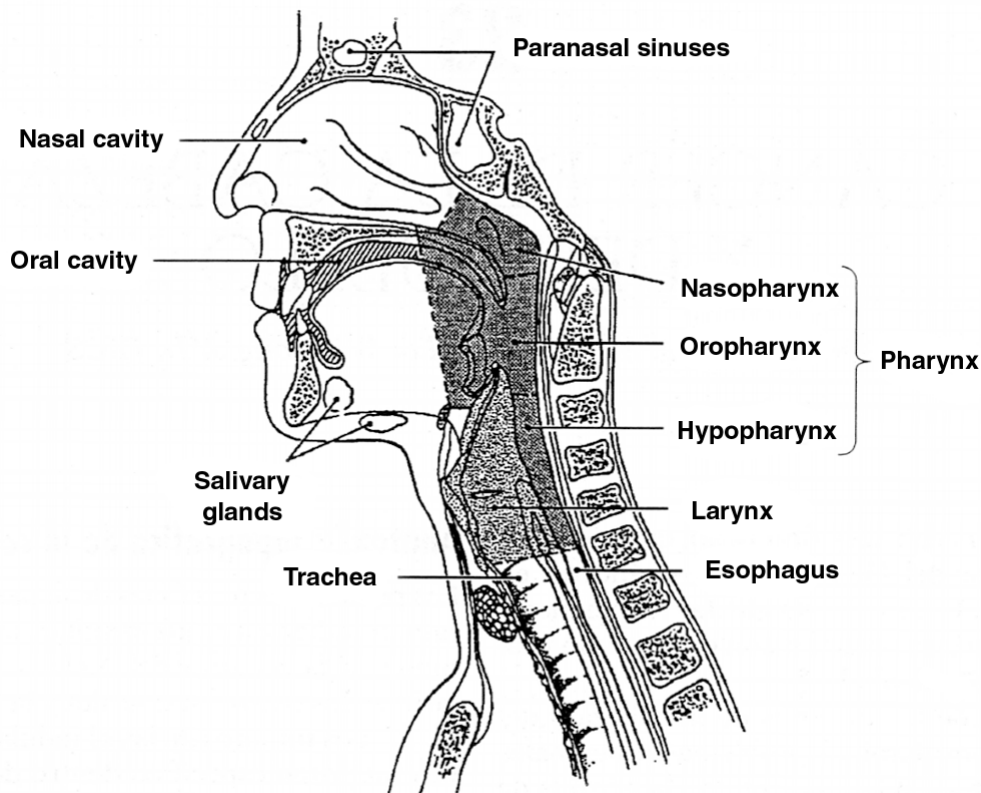
Not all tumors are cancerous. Tumors that aren't cancer are called benign. Benign tumors can cause problems – they can grow very large and press on healthy organs and tissues. But they cannot grow into (invade) other tissues. Because they can't invade, they also can't spread to other parts of the body (metastasize). These tumors are almost never life threatening.

## **What is nasopharyngeal cancer?**

Nasopharyngeal cancer develops in the nasopharynx, an area in the back of the nose toward the base of skull. To understand nasopharyngeal cancer, it helps to know about the structure and function of the nasopharynx.

### **About the nasopharynx**

The nasopharynx is the upper part of the throat (pharynx) that lies behind the nose. It is a box-like chamber about 1½ inches on each edge. It lies just above the soft part of the roof of the mouth (soft palate) and just in back of the entrance into the nasal passages.



The nasopharynx serves as a passageway for air from the nose to the throat (and eventually to the lungs).

## Nasopharyngeal tumors

Several types of tumors can develop in the nasopharynx. Some of these tumors are benign (non-cancerous), but others are malignant (cancerous). It is important to discuss what type of tumor you might have with your doctor.

### **Benign nasopharyngeal tumors**

Benign tumors of the nasopharynx are fairly rare and tend to occur in children and young adults. They include tumors or malformations of the vascular (blood-carrying) system, such as *angiofibromas* and *hemangiomas*, and benign tumors of the minor salivary glands that are found within the nasopharynx. Treatment of these tumors (if it is needed) is different from that for cancerous nasopharyngeal tumors and is not discussed further in this document. If you have one of these tumors, you and your doctor will talk about what treatments might be appropriate for you.

### **Malignant nasopharyngeal tumors**

These tumors can invade surrounding tissues and spread to other parts of the body.

**Nasopharyngeal carcinoma (NPC):** This is by far the most common malignant tumor of the nasopharynx. A *carcinoma* is a cancer that starts in epithelial cells -- the cells lining the internal and external surfaces of the body. Most of the rest of this document refers to NPC.

There are 3 types of NPC:

- Keratinizing squamous cell carcinoma
- Non-keratinizing differentiated carcinoma
- Undifferentiated carcinoma

Each of these types is more common in some areas of the world than in others. Most NPC in the United States is the keratinizing type. In Southeast Asia, where NPC is much more common, most cases are the undifferentiated type.

These types look different when seen under a microscope, but studies have shown they start from the same cell type -- the epithelial cells that cover the surface lining of the nasopharynx. The treatment is also usually the same for all types of nasopharyngeal cancer. The stage of the cancer -- how far it has grown and spread -- is often more important than its type in predicting a person's outlook (prognosis).

Many nasopharyngeal carcinomas also contain lots of immune system cells, especially lymphocytes. The term *lymphoepithelioma* is sometimes used to describe an NPC with many lymphocytes among the cancer cells. The presence of these cells does not usually affect the choice of treatment options. But they may be a clue to developing new treatments since they may represent the body's attempt to "reject" the tumor (for more information, see the section "What's new in nasopharyngeal cancer research and treatment?").

**Other cancers in the nasopharynx:** Other types of cancers can arise from the tissues that make up the nasopharynx.

*Lymphomas* can sometimes start in the nasopharynx. They are cancers of immune system cells called *lymphocytes*, cells that are normally found in the nasopharynx. These cancers are discussed in our document, *Non-Hodgkin Lymphoma*.

*Adenocarcinoma* and *adenoid cystic carcinoma* are cancers that can develop in the minor salivary glands found in the nasopharynx, but they are more commonly found in the nasal or oral cavities. More information on these cancers can be found in our documents, *Oral Cavity and Oropharyngeal Cancer*, *Nasal Cavity and Paranasal Sinuses Cancer*, and *Salivary Gland Cancer*.

# What are the key statistics about nasopharyngeal cancer?

Nasopharyngeal cancer (NPC) is fairly rare in most parts of the world. In North America, it occurs in about 7 in every 1 million people. In 2011, there were an estimated 2,750 cases in the United States.

This cancer is, however, much more common in certain parts of Asia and North Africa, particularly in Southeast China. It is also more common among Inuits of Alaska and Canada, and among some immigrant groups in the United States, such as recent Chinese and Hmong immigrants.

The risk of NPC increases slowly throughout life, but it can occur in people of any age, including children. About half of the people with NPC in the United States are younger than 55 years old.

# What are the risk factors for nasopharyngeal cancer?

A risk factor is anything that affects a person's chance of getting a disease such as cancer. Different cancers have different risk factors. For example, exposing skin to strong sunlight is a risk factor for skin cancer. Smoking is a risk factor for cancers of the lung, mouth, larynx (voice box), bladder, kidney, several other organs, and for certain leukemias.

But risk factors don't tell us everything. Having a risk factor, or even several risk factors, does not mean that you will get the disease. And many people who get the disease may not have had any known risk factors.

Scientists have found several risk factors that make a person more likely to develop nasopharyngeal cancer (NPC).

## Gender

NPC is found about twice as often in males as it is in females.

## Race/ethnicity

In the United States, NPC is most common in Chinese Americans, followed by other Asian-American groups, African Americans, Hispanics/Latinos, and whites.

## Diet

People who live in areas of Asia, northern Africa, and the Arctic region where NPC is common typically eat diets very high in salt-cured fish and meat. Indeed, the rate of this

cancer is dropping in southeast China as people begin eating a more Westernized diet. In contrast, some studies have suggested that diets high in fruits and vegetables may lower the risk of NPC.

## Epstein-Barr virus infection

Almost all nasopharyngeal cancer cells contain parts of the Epstein-Barr virus (EBV), and most people with nasopharyngeal cancer have evidence of infection by this virus in their blood. Infection with EBV is very common throughout the world, often occurring in childhood. In the United States, where infection with this virus tends to occur in slightly older children, it often causes infectious mononucleosis ("mono"), usually in teens.

But the link between EBV infection and NPC is complex and not yet completely understood. EBV infection alone is not enough to cause NPC, since infection with this virus is very common and this cancer is rare. Other factors, such as a person's genes, may affect how the body deals with EBV, which in turn may affect how EBV contributes to the development of NPC.

## Genetic factors

A person's genes may affect their risk for NPC. For example, 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.

## Family history

Family members of people with NPC are more likely to get this cancer. It is 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.

## Other possible risk factors

Most (but not all) studies have found that smoking may contribute to the development of NPC. More research is needed to define this link.

Some studies have linked heavy alcohol intake to this cancer.

Some (but not all) studies have also suggested that workplace exposure to formaldehyde or wood dust may increase the risk of NPC.

# Do we know what causes nasopharyngeal cancer?

The exact cause of most cases of nasopharyngeal cancer (NPC) is not known. However, scientists have found that the disease is linked with certain dietary habits, infections, and inherited characteristics that are described in the section called "What are the risk factors for nasopharyngeal cancer?" Research is being done to learn more about these causes.

Over the past few years, scientists have studied how the Epstein-Barr virus (EBV) may cause cells in the nasopharynx to become cancerous, but much still remains to be learned. In developed countries, most people infected with EBV develop only infectious mononucleosis, 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 viral 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 function. We usually look like our parents because they are the source of our DNA. However, DNA affects more than how we look. Some genes contain instructions for controlling when cells grow and divide. Viruses such as EBV also contain DNA. When a cell is infected with the virus, the viral DNA may mix with the normal human DNA. EBV DNA may instruct the cells of the nasopharynx to divide and grow in an abnormal way.

But as mentioned in the section on risk factors, EBV infection only rarely results in NPC, so other factors probably play a role in whether or not it causes cancer. Eating a diet high in salt-cured fish and meat seems to increase the ability of EBV to cause NPC. Studies indicate that foods preserved in this way may produce chemicals that can damage DNA. The damaged DNA alters the cells' ability to properly regulate their growth and replication.

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.

## Can nasopharyngeal cancer be prevented?

Most people in the United States who develop nasopharyngeal cancer (NPC) have no avoidable risk factors, so their cancers could not have been prevented.

Because certain dietary factors have been linked with NPC risk, reducing or eliminating some types of food may lower the number of cases 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. Other factors, such as genetics, are likely to play a part as well.

## Can nasopharyngeal cancer be found early?

In the United States and other countries where nasopharyngeal cancer (NPC) is fairly rare, most doctors do not recommend routine screening for this cancer. (Screening is testing for cancer in people without any symptoms.) There are no simple, non-invasive exams or blood tests that can reliably find this cancer early.

But in some parts of the world such as China, where NPC is common, some people are being screened routinely for this cancer. They are first selected because their blood shows evidence of infection with the Epstein-Barr virus. They are given regular exams of the nasopharynx and neck. This strategy can also be used in families when one member has developed NPC. It isn't known if this strategy lowers the death rate from this cancer.

Some cases of NPC can be found early because they cause symptoms that make patients seek medical attention. The symptoms may even seem unrelated to the nasopharynx (for example, a constant feeling of fullness in one ear). But in most cases, nasopharyngeal cancers may not cause symptoms until they have reached an advanced stage.

## How is nasopharyngeal cancer diagnosed?

Nasopharyngeal cancer (NPC) is most often diagnosed when a patient goes to a doctor because of symptoms or a lump in the neck.

### Signs and symptoms of nasopharyngeal cancer

About 3 out of 4 patients complain of a lump or mass in the neck when they first see their doctor. This is caused by the cancer spreading to lymph nodes in the neck, causing them to become larger than normal. (Lymph nodes are bean-sized collections of immune system cells found throughout the body).

Other possible symptoms of NPC include:

- Hearing loss, ringing in the ear, or feeling of fullness in the ear (especially on one side only)
- Ear infections that keep coming back
- Nasal blockage or stuffiness
- Nosebleeds
- Headache
- Facial pain or numbness

- Trouble opening the mouth
- Blurred or double vision

These are possible symptoms and signs of NPC, but they are more likely to be caused by benign diseases. Still, if you have any of these problems, it's important to see your doctor right away so the cause can be found and treated, if needed. If you develop a middle ear infection in one ear and you have never had ear infections in the past, it is important that a specialist examine your nasopharynx. This is especially true if you don't have an upper respiratory tract infection (like a "cold") along with the ear infection.

## Medical history and physical exam

If you have any signs or symptoms that suggest you might have nasopharyngeal cancer, your doctor will want to get your complete medical history to check for symptoms and risk factors, including your family history.

A physical exam will be done to look for signs of NPC and other health problems. During the exam, the doctor will pay special attention to the head and neck area, including the nose, mouth, and throat; the facial muscles, and the lymph nodes in the neck.

If the results of the standard exam are abnormal, your doctor may order imaging tests (such as CT or MRI) to look more closely. Your doctor may also refer you to an otolaryngologist (a doctor specializing in ear, nose, and throat problems) for a more detailed exam. A thorough physical exam of the nasopharynx is usually done by an otolaryngologist because they have more specialized equipment and training. The nasopharynx is a difficult area to examine. Most doctors do not have the specialized training or equipment to do a thorough exam of this part of the body.

## Exams of the nasopharynx

Because the nasopharynx is located deep inside the head and is not easily seen, special techniques are needed to examine this area. There are 2 main types of exam used to look inside the nasopharynx for abnormal growths, bleeding, or other signs of disease.

- *Indirect nasopharyngoscopy* uses special mirrors and lights to look at the nasopharynx and nearby areas.
- For *direct nasopharyngoscopy*, the doctor uses a fiberoptic scope (a flexible, lighted, narrow tube inserted through the mouth or nose) to look directly at the lining of the nasopharynx.

If a tumor starts under the lining of the nasopharynx (in the tissue called the submucosa), it may not be possible to see it directly on physical exam, which is why imaging tests such as CT scans (see below) may be needed as well.

## Biopsy

Symptoms and the results of exams may strongly suggest that nasopharyngeal cancer is present, but the actual diagnosis is made by removing cells from an abnormal area and looking at them under a microscope. This is known as a *biopsy*. Different types of biopsies may be done, depending on where the abnormal area is.

### Endoscopic biopsy

If a suspicious growth is found in the nasopharynx during an exam, the doctor may remove a biopsy sample with small instruments and the aid of a fiber-optic scope. Often, biopsies of the nasopharynx are done in the operating room as an outpatient procedure. The sample is then sent to a lab, where a doctor called a pathologist looks at it under a microscope. If cancer cells are present, the pathologist sends back a report describing the type of the cancer.

In some cases, NPC may not produce any visible signs of the disease. This is because most of the cancer is hidden beneath the surface. If the patient has symptoms suggesting NPC, the doctor may take several samples of normal-looking tissue, which may be found to contain cancer cells when looked at under the microscope.

### Fine needle aspiration (FNA) biopsy

An FNA biopsy may be used if you have a suspicious lump in or near your neck. For this procedure, the doctor uses a thin, hollow needle attached to a syringe to aspirate (withdraw) a few drops of fluid containing cells and tiny fragments of tissue. A local anesthetic (numbing medicine) may be used on the skin where the needle will be inserted. In some cases, no anesthetic is needed.

The doctor places the needle directly into the mass for about 10 seconds and withdraws cells and a few drops of fluid. The cells are then looked at under a microscope to see if they are cancerous (malignant).

In patients with an enlarged lymph node in the neck area, an FNA biopsy can help determine if the enlargement is caused by a response to an infection, the spread of cancer from somewhere else (such as the nasopharynx), or a cancer that begins in lymph nodes called a *lymphoma*. If a patient already known to have NPC has enlarged neck lymph nodes, FNA can help determine if the spread of NPC caused the lymph node swelling.

## Imaging tests

Imaging tests use x-rays, magnetic fields, sound waves, or radioactive particles to create pictures of the inside of your body. Imaging tests may be done for a number of reasons, including to help find a suspicious area that might be cancerous, to learn how far cancer may have spread, and to help determine if treatment has been effective.

## **Chest x-ray**

If you have been diagnosed with NPC, a plain x-ray of your chest may be done to see if the cancer has spread to your lungs. This is very unlikely unless your cancer is far advanced. This x-ray can be done in any outpatient setting. If the results are normal, you probably don't have cancer in your lungs.

## **Computed tomography (CT) scan**

The CT scan is an x-ray procedure that produces detailed cross-sectional images of your body. Instead of taking one x-ray, a CT scanner takes many pictures as it rotates around you. A computer then combines these into images of slices of the part of your body that is being studied.

Before any pictures are taken, you may be asked to drink 1 to 2 pints of a liquid called *oral contrast*. This helps outline the intestine so that certain areas are not mistaken for tumors. It may not be needed for CT scans of the nasopharynx. You may also receive an IV (intravenous) line through which a different kind of contrast dye (IV contrast) is injected. This helps better outline structures in your body.

The injection can cause some flushing (redness and warm feeling). Some people are allergic and get hives or, rarely, more serious reactions like trouble breathing and low blood pressure. Be sure to tell the doctor if you have ever had a reaction to a contrast material used for x-rays.

You need to lie still on a table while the scan is being done. During the test, the table moves in and out of the scanner, a ring-shaped machine that completely surrounds the table. You might feel a bit confined by the ring you have to lie in while the pictures are being taken.

The CT scan can provide information about the size, shape, and position of a tumor and can help find enlarged lymph nodes that might contain cancer. CT scans or MRIs are important in looking for cancer that may have grown into the bones at the base of the skull. This is a common place for nasopharyngeal cancer to grow. CT scans can also be used to look for tumors in other parts of the body.

## **Magnetic resonance imaging (MRI) scan**

Like CT scans, MRI scans provide detailed images of soft tissues in the body. But MRI scans use radio waves and strong magnets instead of x-rays. The energy from the radio waves is absorbed and then released in a pattern formed by the type of body tissue and by certain diseases. A computer translates the pattern into very detailed images of parts of the body. A contrast material called *gadolinium* is often injected into a vein before the scan to better see details.

MRI scans may be a little more uncomfortable than CT scans. They take longer -- often up to an hour. You may be placed inside a large cylindrical tube, which is confining and can upset people with a fear of enclosed spaces. Special, "open" MRI machines can help

with this if needed. The MRI machine makes buzzing and clicking noises that you may find disturbing. Some places will provide earplugs to help block this noise out.

Like CT scans, MRIs can be used to try to determine if the cancer has grown into structures near the nasopharynx. MRIs are a little better than CT scans at showing the soft tissues in the nose and throat, but they're not quite as good for looking at the bones at the base of the skull, a common place for nasopharyngeal cancer to grow.

## **Positron emission tomography (PET) scan**

For the PET scan, you will receive an injection of glucose (a form of sugar) that contains a radioactive atom. The amount of radioactivity used is very low. Because cancer cells in the body are growing rapidly, they absorb large amounts of the radioactive sugar. A special camera can then be used to create a picture of areas of radioactivity in the body. The picture is not finely detailed like a CT or MRI scan, but it provides helpful information about your whole body.

Your doctor may use this test to see if the cancer has spread to your lymph nodes. It can also help give the doctor a better idea of whether an abnormal area on your chest x-ray may be cancer. A PET scan can also be useful if your doctor thinks the cancer may have spread but doesn't know where.

Some machines are able to perform both a PET and CT scan at the same time (PET/CT scan). This lets the doctor compare areas of higher radioactivity on the PET with the appearance of that area on the CT.

## **Blood tests**

### **Routine blood counts and blood chemistry tests**

Routine blood tests can help determine a patient's overall health. These tests can help diagnose malnutrition, anemia (low red blood counts), liver disease, and kidney disease. And they may suggest the possibility of spread of the cancer to the liver or bone, which may prompt further testing.

In people getting chemotherapy, these blood tests are important to see if the treatment is damaging the bone marrow (where new blood cells are made), liver, and kidneys.

### **Epstein-Barr virus (EBV) DNA levels**

In some patients, the blood level of EBV DNA before and after treatment may help to show how effective treatment is.

# How is nasopharyngeal cancer staged?

Staging is the process of finding out how far a cancer has spread. The stage of nasopharyngeal cancer (NPC) is one of the most important factors in selecting treatment options and estimating a patient's outlook for recovery and survival (prognosis).

The stage of a cancer can be determined by the results of the physical exam, imaging tests (CT or MRI scan, etc.) and other tests, which are described in the section called "How is nasopharyngeal cancer diagnosed?", and by the results of surgery if it has been done.

If you have NPC, ask your cancer care team to explain staging in a way you can understand. By knowing all you can about staging, you can take a more active role in making informed decisions about your treatment.

## The American Joint Committee on Cancer (AJCC) TNM system

A staging system is a standardized way for members of the cancer care team to summarize the extent of a cancer's spread. The most common system used to describe the spread of NPC is the TNM system created by the American Joint Committee on Cancer (AJCC). This system contains 3 key pieces of information:

- **T** describes whether the primary **tumor** has invaded other organs or tissues near the nasopharynx.
- **N** describes whether the cancer spread to nearby (regional) lymph **nodes** (bean-sized collections of immune system cells located throughout the body).
- **M** indicates whether the cancer has **metastasized** (spread) to other organs of the body. (The most common sites of distant nasopharyngeal cancer spread are the lungs, liver, and bones.)

The numbers or letters that appear after T, N, and M provide more details about each of these factors:

- The numbers 0 through 4 indicate increasing severity.
- The letter X means "cannot be assessed" because the information is not available.
- The letters "is" after the T stand for "in situ," which means the tumor is still only in the layer of cells where it started and has not yet invaded deeper.

### T groups for nasopharyngeal cancer

**TX:** Primary tumor cannot be assessed because of incomplete information.

**T0:** No evidence of a primary tumor.

**Tis:** Carcinoma in situ (cancer cells are present only in the surface layer of the nasopharynx but have not invaded into deeper layers).

**T1:** Tumor is in the nasopharynx. The cancer may also have grown into the oropharynx (the back of the mouth, where the throat begins) and/or nasal cavity but no farther.

**T2:** The cancer has grown into the tissues of left or right sides of the upper part of the throat (but not bone)

**T3:** The tumor has grown from the nasopharynx into the sinuses and/or the bones nearby.

**T4:** The tumor has grown from the nasopharynx into the skull and/or cranial nerves (nerves in the head that lie near the nasopharynx and have special functions such as vision, smell, and eye movement), the hypopharynx (lower part of the throat), or the eye or its nearby tissues.

## **N groups for nasopharyngeal cancer**

**NX:** Nearby lymph nodes cannot be assessed due to incomplete information.

**N0:** No spread to nearby lymph nodes.

**N1:** Spread to 1 or more lymph nodes on one side of the neck; OR spread to lymph nodes behind the throat (called *retropharyngeal lymph nodes*) on either side of the neck. In either case, no lymph node is larger than 6 cm (about 2½ inches) across.

**N2:** Spread to lymph nodes not larger than 6 cm across, on both sides of the neck.

**N3:** Spread to 1 or more lymph nodes that are either:

- **N3a:** larger than 6 cm across
- **N3b:** are located in the shoulder area just above the collarbone (this area is called the *supraclavicular fossa*)

## **M groups for nasopharyngeal cancer**

**M0:** The cancer has not spread to tissues or organs far away from the nasopharynx.

**M1:** The cancer has spread to tissues or organs far away from the nasopharynx.

## **TNM stage grouping**

Once the T, N, and M categories have been determined, this information is combined in a process called *stage grouping*. The stage is expressed as the number 0 (zero) or the Roman numerals I to IV. Some stages are subdivided with letters.

**Stage 0: Tis, N0, M0:** The cancer is "in situ." Cancer cells are present only in the surface layer of the nasopharynx but have not yet grown into deeper layers of nasopharyngeal tissue (Tis). The cancer has not spread to nearby lymph nodes (N0) or distant sites (M0).

**Stage I: T1, N0, M0:** The tumor is in the nasopharynx and may have spread to soft tissues of the nasal cavity and/or the oropharynx (T1). It has not spread to nearby lymph nodes (N0) or distant sites (M0).

**Stage II:** Either:

**T2, N0, M0:** The tumor has grown into the tissues of the left or right sides of the upper part of the throat (T2). It has not spread to nearby lymph nodes (N0) or distant sites (M0).

OR

**T1 or T2, N1, M0:** The tumor may still be confined to the nasopharynx (T1), or it may have extended to the soft tissues of the nasal cavity and the oropharynx (T1) and/or the left or right sides of the upper part of the throat (T2). It has spread to one or more nearby lymph nodes, none of which are larger than 6 cm (about 2½ inches) across. These lymph nodes are either neck lymph nodes on one side or lymph nodes behind the throat (*retropharyngeal* lymph nodes) on either side (N1). The cancer has not spread to distant sites (M0).

**Stage III:** Either:

**T3, N0 to N2, M0:** The tumor has spread to the sinuses or the bones near the nasopharynx (T3). It may or may not have spread to lymph nodes in the neck or behind the throat, none of these lymph nodes are larger than 6 cm across (N0 to N2). It has not spread to distant sites (M0).

OR

**T1 or T2, N2, M0:** The tumor may still be confined to the nasopharynx (T1), or it may have grown into the soft tissues of the nasal cavity (T1), the oropharynx (T1), or the left or right sides of the upper part of the throat (T2). The tumor has spread into nearby neck lymph nodes on both sides, with none of the lymph nodes larger than 6 cm across (N2). The cancer has not spread to distant sites. (M0).

**Stage IVA: T4, N0 to N2, M0:** The tumor has grown into the skull and/or cranial nerves, the hypopharynx, the eye, or its nearby tissues (T4). It may or may not have spread to nearby lymph nodes in the neck, none of which are larger than 6 cm across (N0 to N2). It has not spread to distant sites (M0).

**Stage IVB: Any T, N3, M0:** The tumor may or may not have extended into nearby soft tissues or bones (any T). It has spread to lymph nodes that are larger than 6 cm across and/or are located in the shoulder area above the collarbone (N3). The cancer has not spread to distant sites (M0).

**Stage IVC: Any T, any N, M1:** The tumor may or may not have extended into nearby soft tissues or bones (any T). It may or may not have spread to nearby lymph nodes (any N). It has spread to distant sites (M1).

## Survival rates by stage

Survival rates are often used by doctors as a standard way of discussing a person's prognosis (outlook). Some patients with cancer may want to know the survival statistics for people in similar situations, while others may not find the numbers helpful, or may even not want to know them.

The 5-year survival rate refers to the percentage of patients who live at least 5 years after their cancer is diagnosed. Of course, many people live much longer than 5 years (and many are cured).

Relative survival rates (such as the numbers below) adjust for patients with nasopharyngeal cancer who die from other causes, such as heart disease. They are considered to be a more accurate way to describe the outlook for patients with a particular type and stage of cancer.

In order to get 5-year survival rates, doctors have to look at people who were treated at least 5 years ago. Improvements in treatment since then may result in a more favorable outlook for people now being diagnosed with nasopharyngeal cancer.

Survival rates are often based on previous outcomes of large numbers of people who had the disease, but they cannot predict what will happen in any particular person's case. Many other factors may affect a person's outlook, such as their age, overall health, and how well the cancer responds to treatment. Your doctor can tell you how the numbers below may apply to you, as he or she is familiar with the aspects of your particular situation.

The numbers below come from the American Joint Committee on Cancer, and are based on people diagnosed between 1998 and 1999.

<b>Stage</b>	<b>Relative 5-year survival rates</b>
I	72%
II	64%
III	62%
IV	38%

# How is nasopharyngeal cancer treated?

*This information represents the views of the doctors and nurses serving on the American Cancer Society's Cancer Information Database Editorial Board. These views are based on their interpretation of studies published in medical journals, as well as their own professional experience.*

*The treatment information in this document is not official policy of the Society and is not intended as medical advice to replace the expertise and judgment of your cancer care team. It is intended to help you and your family make informed decisions, together with your doctor.*

*Your doctor may have reasons for suggesting a treatment plan different from these general treatment options. Don't hesitate to ask him or her questions about your treatment options.*

The first part of this section describes the various types of treatments used for nasopharyngeal cancer (NPC). This is followed by a description of the most common approaches used based on the stage of the cancer.

## Making treatment decisions for nasopharyngeal cancer

After the cancer is found and staged, your cancer care team will discuss treatment options (choices) with you. Depending on the stage of the cancer, your overall health, and other factors, your treatment options may include radiation therapy, chemotherapy or other drugs, surgery, or some combination of these.

It is important to take time and think about all of your choices. If time permits, seeking a second opinion is often a good idea. It can give you more information and help you feel more confident about the chosen treatment plan. Some insurance companies may require a second opinion before they will agree to pay for treatments.

## Surgery for nasopharyngeal cancer

### Removing the tumor

Because the nasopharynx is a difficult place to operate on and because other types of treatment are often effective, surgery is seldom the main treatment for patients with nasopharyngeal cancer.

With newer endoscopic surgical techniques, doctors can completely remove some nasopharyngeal tumors, but this is appropriate only for a small number of patients. These complex procedures are done only in specialized centers. Surgery does have some advantages -- for example, it lets doctors look at the cancer (and nearby tissues) closely in the lab to make sure it has all been removed.

The risks and side effects of any surgery depend on the extent of the operation and a person's general health before the surgery. All surgeries carry some risk, including the possibility of bleeding, infections, complications from anesthesia, and pneumonia. Most people will have some pain for a while after the operation, although this can usually be controlled with medicines. Other possible side effects can include problems with speech

or swallowing. If you are considering surgery, your doctor will discuss the likely side effects with you beforehand.

## Removing lymph nodes

Cancers of the nasopharynx often spread to the lymph nodes in the neck. These cancers often respond well to treatment with radiation therapy (and sometimes chemotherapy). But if some cancer remains after these treatments, an operation called a *neck dissection* may be needed to remove these lymph nodes.

There are several types of neck dissection surgery. They differ in the amount of tissue removed from the neck.

- A *partial* or *selective neck dissection* removes only lymph nodes that are closest to the primary tumor site and most likely to have cancer spread.
- A *modified radical neck dissection* removes lymph nodes on one side of the neck between the jaw bone and collarbone, as well as some muscle and nerve tissue. The main nerve to the shoulder muscle is usually preserved.
- A *radical neck dissection* removes more lymph nodes on one side as well as some muscles, nerves, and veins.

**Possible risks and side effects:** Neck dissections have some of the same risks as any other operations, such as bleeding, infection, pain, and problems with the anesthesia.

The most common problem after any neck dissection is numbness of the earlobe. This is caused by the removal of the greater auricular nerve. There may also be weakness when raising the arm above the head (caused by removal or injury to the spinal accessory nerve). Weakness of the lower lip (caused by injury to lower branches of the facial nerve) is sometimes seen as well. This and any other nerve weakness may be short or long term. After more extensive neck dissections, physical therapists can teach you exercises to improve neck and shoulder strength and mobility.

## Radiation therapy for nasopharyngeal cancer

Radiation therapy uses high-energy x-rays or particles to destroy cancer cells or slow their rate of growth. It is usually the main form of treatment for NPC because most cases are very sensitive to radiation.

Treatment is usually given both to the main nasopharyngeal mass and to nearby lymph nodes in the neck. Even if the lymph nodes are not abnormally firm or large, radiation is still used in case a few cancer cells have spread there. If the lymph nodes are known to have cancer cells, higher radiation doses are used.

Different types of radiation therapy can be used to treat NPC:

## **External beam radiation therapy (EBRT)**

This type of radiation therapy uses x-rays from a machine outside the patient's body to kill cancer cells. It is the most common form of radiation therapy for NPC.

The treatment is much like getting an x-ray, but the radiation is more intense. The procedure itself is painless. Before your treatments start, the radiation team will take careful measurements to determine the correct angles for aiming the radiation beams and the proper dose of radiation. Each treatment lasts only a few minutes, although the setup time -- getting you in place for treatment -- usually takes longer. Most often, radiation treatments are given 5 days a week for several weeks.

For many cases of nasopharyngeal cancer, chemotherapy is given with radiation to try to increase its effects. This treatment, known as *chemoradiation*, can be better than radiation alone at fighting the cancer, but it also tends to have more side effects. Cisplatin is the chemotherapy drug most often combined with radiation. (This is discussed more in the section called "Chemotherapy.")

Standard (conventional) EBRT is used much less often than in the past. Using newer techniques, doctors can more accurately treat nasopharyngeal cancers while reducing the radiation exposure to nearby healthy tissues. This may offer a better chance of increasing the success rate and reducing side effects. Many doctors now recommend using these newer approaches when they are available.

**Three-dimensional conformal radiation therapy (3D-CRT)** uses special computers to precisely map the location of the tumor(s). Radiation beams are shaped and aimed at the tumor(s) from several directions, which makes it less likely to damage normal tissues.

**Intensity-modulated radiation therapy (IMRT)** is an advanced form of 3D therapy. It uses a computer-driven machine that moves around the patient as it delivers radiation. Along with shaping the beams and aiming them at the tumor from several angles, the intensity (strength) of the beams can be adjusted to minimize the dose reaching the most sensitive normal tissues. Many major hospitals and cancer centers are now able to provide IMRT.

**Stereotactic radiosurgery** is a type of radiation treatment that delivers a large, precise radiation dose to the tumor area in a single session. (There is no actual surgery involved in this treatment.) The radiation may be delivered in 2 ways.

In one approach, radiation beams are focused at the tumor from hundreds of different angles for a short period of time. One machine used to deliver this type of radiation is known as a *Gamma Knife*.

Another approach uses a movable linear accelerator (a machine that creates radiation) that is controlled by a computer. Instead of delivering many beams at once, this machine moves around to deliver radiation to the tumor from different angles. Several machines, with names such as *X-Knife*, *CyberKnife*, and *Clinac*, do stereotactic radiosurgery in this way.

## **Brachytherapy (internal radiation)**

Another way to deliver radiation is to insert (implant) very thin metal rods or wires containing radioactive materials into or very near the cancer. The radiation travels a very short distance, so it affects the cancer without causing much harm to nearby healthy body tissues.

An implant is usually left in place for several days while the patient stays in a private hospital room. The length of time that visitors, nurses, and other caregivers can spend with the patient may be limited because of potential radiation exposure, but this depends on the type of radiation. The implants are removed before the patient goes home.

Brachytherapy may be used if the cancer comes back after external beam radiation therapy (although stereotactic radiosurgery may be used instead, as it is less invasive). Sometimes, internal and external beam radiation therapy are used together.

## **Possible side effects of radiation therapy**

External beam radiation may cause sunburn-like skin changes, nausea, vomiting, and fatigue. Often these go away after treatment.

Radiation therapy of NPC can cause specific problems because several important structures in the head and neck may also get some radiation during treatment.

A major concern with radiation therapy is that it often damages the salivary glands, which can result in a permanently dry mouth and nose. This can cause problems with eating and swallowing and can promote tooth decay. Most doctors advise that you have your teeth checked by a dentist before you have radiation therapy to the head or neck area. In some cases, the dentist may even recommend removing some teeth before treatment to lessen the chance you will have problems later.

Some of the damage to the salivary glands may be lessened if a drug called amifostine (Ethyol<sup>®</sup>) is given before each radiation treatment. There may also be fewer problems if IMRT is used.

Radiation can also cause sore throat, sores in the mouth, hoarseness, trouble swallowing and eating, loss of taste, and damage to bones in the skull. If the sores in the mouth are severe, patients often have trouble eating and may lose weight. If certain nerves get radiation, hearing or vision may be affected.

If the neck area is treated with external beam radiation, the thyroid gland may be damaged. Pills to replace thyroid hormone may be needed after treatment.

The pituitary gland, which is responsible for controlling hormones, can be damaged also. Finally, the carotid artery, which is the major blood vessel delivering blood to the brain, can sometimes become narrowed after radiation. This usually takes several years to occur.

It is important to discuss the possible side effects of radiation therapy with your doctor before starting treatment, and to make sure everything is being done to try to limit these side effects as much as possible.

For more general information about radiation therapy, please see our document, *Understanding Radiation Therapy: A Guide for Patients and Families*.

## Chemotherapy for nasopharyngeal cancer

Chemotherapy (chemo) is treatment that uses drugs to treat cancer. These drugs are most often given into a vein (IV) or by mouth. They enter the bloodstream and reach all areas of the body, making this treatment useful for cancers that have spread beyond the head and neck. Some chemo drugs also make cancer cells more sensitive to radiation. Chemo is often used together with radiation therapy as the first treatment for more advanced stages of this cancer. This is called *chemoradiation*. It may also be used after radiation (or chemoradiation). This is known as *adjuvant treatment*. It is also used alone for patients whose NPC has spread to distant organs such as the lungs, bones, or liver.

Doctors give chemotherapy in cycles, with each period of treatment followed by a rest period to allow the body time to recover. Chemotherapy cycles generally last about 3 to 4 weeks. Chemotherapy is often not recommended for patients in poor health, but advanced age by itself is not a barrier to getting chemotherapy.

Cisplatin is the drug used most often to treat NPC. It is used alone as part of chemoradiation, but may be combined with another drug, 5-fluorouracil (5-FU) if given after radiation. Some other drugs may also be helpful in treating cancer that has spread. These include:

- Carboplatin
- Oxaliplatin
- Bleomycin
- Methotrexate
- Doxorubicin (Adriamycin<sup>®</sup>)
- Epirubicin (Ellence<sup>®</sup>)
- Paclitaxel (Taxol<sup>®</sup>)
- Docetaxel (Taxotere<sup>®</sup>)
- Gemcitabine (Gemzar<sup>®</sup>)

Often, combinations of 2 or more of these drugs are used.

## Possible side effects of chemotherapy

Chemotherapy drugs work by attacking cells that are dividing quickly, which is why they work against cancer cells. But other cells in the body, such as those in the bone marrow, the lining of the mouth and intestines, and the hair follicles, also divide quickly. These cells are also likely to be affected by chemotherapy, which can lead to certain side effects.

The side effects of chemotherapy depend on the type and dose of drugs you are given and how long they are taken. Common side effects include:

- Hair loss
- Mouth sores
- Loss of appetite
- Nausea and vomiting
- Increased chance of infections (due to low white blood cell counts)
- Easy bruising or bleeding (due to low blood platelet counts)
- Fatigue (due to low red blood cell counts)

These side effects are usually short-term and go away after treatment is finished. There are often ways to lessen these side effects. For example, there are drugs that can be given to help prevent or reduce nausea and vomiting. Be sure to ask your doctor or nurse about medicines to help reduce side effects, and let him or her know when you do have side effects so they can be managed effectively.

Some drugs can have other side effects. For example, cisplatin can damage nerves (called *neuropathy*). This can sometimes lead to hearing loss or symptoms in the hands and feet such as pain, burning or tingling sensations, sensitivity to cold or heat, or weakness. In most cases this improves once treatment is stopped, but it may last a long time in some people. 5-FU often causes diarrhea. This can become a severe problem if not treated right away. You should report this, as well as any other side effects or changes you notice while getting chemotherapy to your medical team so that you can get prompt treatment for them. In some cases, the doses of the chemotherapy drugs may need to be reduced or treatment may need to be delayed or stopped to prevent the effects from getting worse.

For more general information about chemotherapy, please see our document, *Understanding Chemotherapy: A Guide for Patients and Families*.

## Targeted therapy for nasopharyngeal cancer

As researchers have learned more about the changes in cells that cause cancer, they have been able to develop newer drugs that specifically target these changes. These targeted drugs work differently from standard chemotherapy drugs. They often have different (and less severe) side effects.

## Cetuximab (Erbix<sup>®</sup>)

Cetuximab is a monoclonal antibody (a man-made version of an immune system protein) that targets the epidermal growth factor receptor (EGFR). EGFR is a protein found on the surface of cells. It normally receives signals telling the cells to grow and divide. Some cancer cells have too many copies of EGFR, which help them grow faster.

Cetuximab is most often used along with chemotherapy in cases where the cancer has come back or continues to grow after initial chemotherapy. Its exact role in treating nasopharyngeal cancer is still being studied.

Cetuximab is given by IV infusion, usually once a week. A rare but serious side effect of cetuximab is an allergic reaction during the first infusion, which could cause breathing problems and low blood pressure. You may be given medicine before treatment to help prevent this. Other, less serious side effects may include an acne-like rash, headache, tiredness, fever, and diarrhea.

## Clinical trials for nasopharyngeal cancer

You may have had to make a lot of decisions since you've been told you have cancer. One of the most important decisions you will make is choosing which treatment is best for you. You may have heard about clinical trials being done for your type of cancer. Or maybe someone on your health care team has mentioned a clinical trial to you.

Clinical trials are carefully controlled research studies that are done with patients who volunteer for them. They are done to get a closer look at promising new treatments or procedures.

If you would like to take part in a clinical trial, you should start by asking your doctor if your clinic or hospital conducts clinical trials. You can also call our clinical trials matching service for a list of clinical trials that meet your medical needs. You can reach this service at 1-800-303-5691 or on our Web site at [www.cancer.org/clinicaltrials](http://www.cancer.org/clinicaltrials). You can also get a list of current clinical trials by calling the National Cancer Institute's Cancer Information Service toll-free at 1-800-4-CANCER (1-800-422-6237) or by visiting the NCI clinical trials Web site at [www.cancer.gov/clinicaltrials](http://www.cancer.gov/clinicaltrials).

There are requirements you must meet to take part in any clinical trial. If you do qualify for a clinical trial, it is up to you whether or not to enter (enroll in) it.

Clinical trials are one way to get state-of-the-art cancer treatment. They are the only way for doctors to learn better methods to treat cancer. Still, they are not right for everyone.

You can get a lot more information on clinical trials in our document called *Clinical Trials: What You Need to Know*. You can read it on our Web site or call our toll-free number (1-800-227-2345) and have it sent to you.

# Complementary and alternative therapies for nasopharyngeal cancer

When you have cancer you are likely to hear about ways to treat your cancer or relieve symptoms that your doctor hasn't mentioned. Everyone from friends and family to Internet groups and Web sites offer ideas for what might help you. These methods can include vitamins, herbs, and special diets, or other methods such as acupuncture or massage, to name a few.

## What exactly are complementary and alternative therapies?

Not everyone uses these terms the same way, and they are used to refer to many different methods, so it can be confusing. We use *complementary* to refer to treatments that are used *along with* your regular medical care. *Alternative* treatments are used *instead of* a doctor's medical treatment.

**Complementary methods:** Most complementary treatment methods are not offered as cures for cancer. Mainly, they are used to help you feel better. Some methods that are used along with regular treatment are meditation to reduce stress, acupuncture to help relieve pain, or peppermint tea to relieve nausea. Some complementary methods are known to help, while others have not been tested. Some have been proven not to be helpful, and a few have even been found harmful.

**Alternative treatments:** Alternative treatments may be offered as cancer cures. These treatments have not been proven safe and effective in clinical trials. Some of these methods may pose danger, or have life-threatening side effects. But the biggest danger in most cases is that you may lose the chance to be helped by standard medical treatment. Delays or interruptions in your medical treatments may give the cancer more time to grow and make it less likely that treatment will help.

## Finding out more

It is easy to see why people with cancer think about alternative methods. You want to do all you can to fight the cancer, and the idea of a treatment with no side effects sounds great. Sometimes medical treatments like chemotherapy can be hard to take, or they may no longer be working. But the truth is that most of these alternative methods have not been tested and proven to work in treating cancer.

As you consider your options, here are 3 important steps you can take:

- Look for "red flags" that suggest fraud. Does the method promise to cure all or most cancers? Are you told not to have regular medical treatments? Is the treatment a "secret" that requires you to visit certain providers or travel to another country?
- Talk to your doctor or nurse about any method you are thinking about using.
- Contact us at 1-800-227-2345 to learn more about complementary and alternative methods in general and to find out about the specific methods you are looking at.

## **The choice is yours**

Decisions about how to treat or manage your cancer are always yours to make. If you want to use a non-standard treatment, learn all you can about the method and talk to your doctor about it. With good information and the support of your health care team, you may be able to safely use the methods that can help you while avoiding those that could be harmful.

## **Treatment options by stage of nasopharyngeal cancer**

The treatment options your cancer care team will recommend depend on the extent of the cancer at its site of origin and how far the cancer has spread, if at all. Nasopharyngeal cancer (NPC) in children is treated the same way as NPC in adults.

### **Stages 0 and I**

The usual treatment for these early stage cancers is radiation therapy aimed at the nasopharyngeal tumor.

Although the cancer has not yet spread to lymph nodes in these stages, the nearby lymph nodes in the neck are usually treated with radiation therapy as well. This is considered preventive (prophylactic) radiation. Some patients may have some cancer cells in these lymph nodes that can't be detected. Although there are too few cancer cells in the lymph nodes to cause visible swelling, these cells could continue to grow and spread if not destroyed by radiation therapy.

### **Stages II, III, IVA and IVB**

These cancers have spread outside of the nasopharynx and often to lymph nodes in the neck or above the collarbone. Patients with these stages of NPC usually receive chemoradiation (chemotherapy given along with radiation therapy) to the nasopharynx and neck lymph nodes. The chemotherapy (chemo) drug most often used is cisplatin, but sometimes another drug is used as well. This is usually followed by more chemo, most often with cisplatin plus 5-FU. Most studies have found that patients live longer if chemoradiation is used, rather than just radiation therapy. But adding chemo leads to more side effects, which can affect quality of life. It's important to understand what the side effects are likely to be before starting this treatment.

If cancer is still in the lymph nodes after this treatment, surgery (neck dissection) may be done to remove the lymph nodes.

### **Stage IVC**

These cancers have spread to distant parts of the body and can be hard to treat. The usual treatment is chemo, often with cisplatin and one other drug. If there is no sign of the cancer after chemotherapy, radiation therapy is given to the nasopharynx and the lymph nodes in the neck to try to kill any remaining cancer cells.

If there are still signs of cancer after the initial chemotherapy or if the cancer comes back later, another chemotherapy regimen using different drugs may be tried. Another option may be chemotherapy plus the targeted drug cetuximab (Erbix).

Because these cancers can be hard to treat effectively, taking part in a clinical trial of newer treatments may be a good option.

## **Recurrent nasopharyngeal cancer**

Cancer is called *recurrent* when it comes back after treatment. Recurrence can be local (in or near the same place it started) or distant (spread to organs such as the lungs or bone). If your cancer returns after treatment, the choices available to you depend on the location and the extent of the recurrent cancer and what treatment was used the first time around (most likely radiation therapy). It is important to understand the goal of any further treatment -- whether it is to try to cure the cancer or to help relieve symptoms -- as well as the likelihood of benefits and risks.

Some recurrent nasopharyngeal tumors can be removed by surgery using an approach through the nose (this is called *endoscopic skull base surgery*). This is a specialized surgery that should only be done by a surgeon with a great deal of experience in this procedure and so it's not available at all medical centers.

Recurrent NPC in regional (neck area) lymph nodes may be treated by additional radiation therapy. But if doctors believe that more radiation would cause serious side effects or if the initial response to radiation was incomplete, surgery (neck dissection) may be used instead.

Cancer that has recurred in distant sites is usually treated with chemotherapy. If chemotherapy had been given already, different chemotherapy drugs may be tried. The targeted drug cetuximab may be given along with chemotherapy, generally on a clinical trial.

New drug treatments being tested in clinical trials and new surgical procedures may help some patients with recurrent NPC, as well as improve knowledge that can help others with NPC in the future.

If the cancer can't be cured, further treatments may be aimed at relieving symptoms caused by the distant spread of the cancer. For example, if the cancer has spread to the spine, radiation therapy may be given to the area to relieve pain and reduce the chances of further complications. Even if a cure is not possible, it is important to remember that there are many options to relieve symptoms of advanced cancer.

## **More treatment information for nasopharyngeal cancer**

For more details on treatment options -- including some that may not be addressed in this document -- the National Comprehensive Cancer Network (NCCN) and the National Cancer Institute (NCI) are good sources of information.

The NCCN, made up of experts from many of the nation's leading cancer centers, develops cancer treatment guidelines for doctors to use when treating patients. These are available on the NCCN Web site ([www.nccn.org](http://www.nccn.org)).

The NCI provides treatment information via telephone (1-800-4-CANCER) and its Web site ([www.cancer.gov](http://www.cancer.gov)). Information for patients as well as more detailed information intended for use by cancer care professionals is also available on [www.cancer.gov](http://www.cancer.gov).

## **What should you ask your doctor about nasopharyngeal cancer?**

As you deal with your cancer and the process of treatment, you need to have honest, open discussions with your cancer care team. You should feel free to ask any question, no matter how minor it might seem. Among the questions you might want to ask are:

- What kind of nasopharyngeal cancer do I have?
- Has my cancer spread beyond the primary site?
- What is the stage of my cancer? What does the stage mean in my case?
- Are there other tests that need to be done before we can decide on treatment?
- How much experience do you have treating this type of cancer?
- Should I get a second opinion?
- What treatment choices do I have?
- What do you recommend and why?
- What is the goal of the treatment?
- Based on what you've learned about my cancer, what is my prognosis (the outlook)?
- What side effects or other risks can I expect from my treatment?
- What should I do to be ready for treatment?
- How long will treatment last? What will it involve? Where will it be done?
- How will treatment affect my daily activities?
- How long will it take me to recover from treatment?
- What are the chances that my cancer will recur?
- What would we do if the treatment doesn't work or if the cancer recurs?
- What type of follow-up might I need after treatment?

Along with these sample questions, you might want to write down some of your own. For instance, you might want to ask about clinical trials for which you may qualify. Keep in mind, too, that doctors are not the only ones who can give you information. Other health care professionals, such as nurses and social workers, may have the answers you seek.

## What happens after treatment for nasopharyngeal cancer?

For many people with nasopharyngeal cancer, treatment may remove or destroy the cancer. Completing treatment can be both stressful and exciting. You may be relieved to finish treatment, but find it hard not to worry about cancer coming back. (When cancer comes back after treatment, it is called *recurrence*.) This is a very common concern in people who have had cancer.

It may take a while before your fears lessen. But it may help to know that many cancer survivors have learned to live with this uncertainty and are living full lives. Our document, *Living With Uncertainty: The Fear of Cancer Recurrence*, gives more detailed information on this.

For other people, the cancer may never go away completely. These people may get regular treatments with chemotherapy, radiation therapy, or other therapies to try to help keep the cancer in check. Learning to live with cancer that does not go away can be difficult and very stressful. It has its own type of uncertainty.

### Follow-up care

When treatment ends, your doctors will still want to watch you closely. It is very important to go to all of your follow-up appointments. During these visits, your doctors will ask questions about any problems you may have and may do exams and lab tests or x-rays and scans to look for signs of cancer or treatment side effects. Almost any cancer treatment can have side effects. Some may last for a few weeks to months, but others can last the rest of your life. This is the time for you to talk to your cancer care team about any changes or problems you notice and any questions or concerns you have.

Most doctors recommend follow-up exams every few months for the first 2 years after treatment, then every 4 to 6 months for the next few years, and less frequently after this. If you had radiation therapy to the neck, your doctor will likely want to get blood tests as well to check your thyroid function.

You may be advised to see your dentist after treatment to check on the health of your teeth. Your doctor will also want to keep a close eye on your hearing, speech, and swallowing, which can be affected by treatment. If you are having problems with any of these, your doctor may refer you to a therapist for help with rehabilitation.

Imaging tests such as CT or PET/CT scans may be done after treatment to get an idea of what the nasopharynx and neck area now look like. Further imaging tests may be done if you later develop any signs or symptoms that might be caused by a return of the cancer.

It is important to keep health insurance. Tests and doctor visits cost a lot, and even though no one wants to think of their cancer coming back, this could happen.

If cancer does recur, further treatment will depend on the location of the cancer, what treatments you've had before, and your health. For more information on how recurrent cancer is treated, see the section called "How is nasopharyngeal cancer treated?" For more general information on dealing with a recurrence, you may also want to see our document, *When Your Cancer Comes Back: Cancer Recurrence*. You can get this document by calling 1-800-227-2345.

## Seeing a new doctor

At some point after your cancer diagnosis and treatment, you may find yourself seeing a new doctor who does not know anything about your medical history. It is important that you be able to give your new doctor the details of your diagnosis and treatment. Make sure you have the following information handy:

- A copy of your pathology report(s) from any biopsies or surgeries
- If you had surgery, a copy of your operative report(s)
- If you were hospitalized, a copy of the discharge summary that doctors prepare when patients are sent home
- If you had radiation therapy, a copy of your treatment summary
- If you had chemotherapy or targeted therapy, a list of your drugs, drug doses, and when you took them
- Copies of any imaging studies, such as CT scans and MRIs (these can often be placed on a DVD)

The doctor may want copies of this information for his records, but always keep copies for yourself.

## Lifestyle changes after having nasopharyngeal cancer

You can't change the fact that you have had cancer. What you can change is how you live the rest of your life -- making choices to help you stay healthy and feel as well as you can. This can be a time to look at your life in new ways. Maybe you are thinking about how to improve your health over the long term. Some people even start during cancer treatment.

### **Making healthier choices**

For many people, a diagnosis of cancer helps them focus on their health in ways they may not have thought much about in the past. Are there things you could do that might make you healthier? Maybe you could try to eat better or get more exercise. Maybe you could cut down on the alcohol, or give up tobacco. Even things like keeping your stress

level under control may help. Now is a good time to think about making changes that can have positive effects for the rest of your life. You will feel better and you will also be healthier.

You can start by working on those things that worry you most. Get help with those that are harder for you. For instance, if you are thinking about quitting smoking and need help, call the American Cancer Society for information and support. This tobacco cessation and coaching service can help increase your chances of quitting for good.

## **Eating better**

Eating right can be hard for anyone, but it can get even tougher during and after cancer treatment. Treatment may change your sense of taste. Nausea can be a problem. You may not feel like eating and lose weight when you don't want to. Or you may have gained weight that you can't seem to lose. All of these things can be very frustrating.

If treatment caused weight changes or eating or taste problems, do the best you can and keep in mind that these problems usually get better over time. You may find it helps to eat small portions every 2 to 3 hours until you feel better. You may also want to ask your cancer team about seeing a dietitian, an expert in nutrition who can give you ideas on how to deal with these treatment side effects.

One of the best things you can do after cancer treatment is put healthy eating habits into place. You may be surprised at the long-term benefits of some simple changes, like increasing the variety of healthy foods you eat. Getting to and staying at a healthy weight, eating a healthy diet, and limiting your alcohol intake may lower your risk for a number of types of cancer, as well as having many other health benefits.

## **Rest, fatigue, and exercise**

Extreme tiredness, called *fatigue*, is very common in people treated for cancer. This is not a normal tiredness, but a "bone-weary" exhaustion that doesn't get better with rest. For some people, fatigue lasts a long time after treatment, and can make it hard for them to exercise and do other things they want to do. But exercise can help reduce fatigue. Studies have shown that patients who follow an exercise program tailored to their personal needs feel better physically and emotionally and can cope better, too.

If you were sick and not very active during treatment, it is normal for your fitness, endurance, and muscle strength to decline. Any plan for physical activity should fit your own situation. An older person who has never exercised will not be able to take on the same amount of exercise as a 20-year-old who plays tennis twice a week. If you haven't exercised in a few years, you will have to start slowly – maybe just by taking short walks.

Talk with your health care team before starting anything. Get their opinion about your exercise plans. Then, try to find an exercise buddy so you're not doing it alone. Having family or friends involved when starting a new exercise program can give you that extra boost of support to keep you going when the push just isn't there.

If you are very tired, you will need to balance activity with rest. It is OK to rest when you need to. Sometimes it's really hard for people to allow themselves to rest when they are used to working all day or taking care of a household, but this is not the time to push yourself too hard. Listen to your body and rest when you need to. (For more information on dealing with fatigue, please see *Fatigue in People With Cancer* and *Anemia in People With Cancer*.)

Keep in mind exercise can improve your physical and emotional health.

- It improves your cardiovascular (heart and circulation) fitness.
- Along with a good diet, it will help you get to and stay at a healthy weight.
- It makes your muscles stronger.
- It reduces fatigue and helps you have more energy.
- It can help lower anxiety and depression.
- It can make you feel happier.
- It helps you feel better about yourself.

And long term, we know that getting regular physical activity plays a role in helping to lower the risk of some cancers, as well as having other health benefits.

## **How does having nasopharyngeal cancer affect your emotional health?**

When treatment ends, you may find yourself overcome with many different emotions. This happens to a lot of people. You may have been going through so much during treatment that you could only focus on getting through each day. Now it may feel like a lot of other issues are catching up with you.

You may find yourself thinking about death and dying. Or maybe you're more aware of the effect the cancer has on your family, friends, and career. You may take a new look at your relationship with those around you. Unexpected issues may also cause concern. For instance, as you feel better and have fewer doctor visits, you will see your health care team less often and have more time on your hands. These changes can make some people anxious.

Almost everyone who has been through cancer can benefit from getting some type of support. You need people you can turn to for strength and comfort. Support can come in many forms: family, friends, cancer support groups, church or spiritual groups, online support communities, or one-on-one counselors. What's best for you depends on your situation and personality. Some people feel safe in peer-support groups or education groups. Others would rather talk in an informal setting, such as church. Others may feel more at ease talking one-on-one with a trusted friend or counselor. Whatever your source of strength or comfort, make sure you have a place to go with your concerns.

The cancer journey can feel very lonely. It is not necessary or good for you to try to deal with everything on your own. And your friends and family may feel shut out if you do not include them. Let them in, and let in anyone else who you feel may help. If you aren't sure who can help, call your American Cancer Society at 1-800-227-2345 and we can put you in touch with a group or resource that may work for you.

## If treatment for nasopharyngeal cancer stops working

If cancer keeps growing or comes back after one kind of treatment, it is possible that another treatment plan might still cure the cancer, or at least shrink it enough to help you live longer and feel better. But when a person has tried many different treatments and the cancer has not gotten any better, the cancer tends to become resistant to all treatment. If this happens, it's important to weigh the possible limited benefits of a new treatment against the possible downsides. Everyone has their own way of looking at this.

This is likely to be the hardest part of your battle with cancer -- when you have been through many medical treatments and nothing's working anymore. Your doctor may offer you new options, but at some point you may need to consider that treatment is not likely to improve your health or change your outcome or survival.

If you want to continue to get treatment for as long as you can, you need to think about the odds of treatment having any benefit and how this compares to the possible risks and side effects. In many cases, your doctor can estimate how likely it is the cancer will respond to treatment you are considering. For instance, the doctor may say that more chemo or radiation might have about a 1% chance of working. Some people are still tempted to try this. But it is important to think about and understand your reasons for choosing this plan.

No matter what you decide to do, you need to feel as good as you can. Make sure you are asking for and getting treatment for any symptoms you might have, such as nausea or pain. This type of treatment is called *palliative care*.

Palliative care helps relieve symptoms, but is not expected to cure the disease. It can be given along with cancer treatment, or can even be cancer treatment. The difference is its purpose - the main purpose of palliative care is to improve the quality of your life, or help you feel as good as you can for as long as you can. Sometimes this means using drugs to help with symptoms like pain or nausea. Sometimes, though, the treatments used to control your symptoms are the same as those used to treat cancer. For instance, radiation might be used to help relieve bone pain caused by cancer that has spread to the bones. Or chemo might be used to help shrink a tumor and keep it from blocking the bowels. But this is not the same as treatment to try to cure the cancer.

At some point, you may benefit from hospice care. This is special care that treats the person rather than the disease; it focuses on quality rather than length of life. Most of the time, it is given at home. Your cancer may be causing problems that need to be managed, and hospice focuses on your comfort. You should know that while getting hospice care often means the end of treatments such as chemo and radiation, it doesn't mean you can't have treatment for the problems caused by your cancer or other health conditions. In

hospice the focus of your care is on living life as fully as possible and feeling as well as you can at this difficult time. You can learn more about hospice in our document called *Hospice Care*.

Staying hopeful is important, too. Your hope for a cure may not be as bright, but there is still hope for good times with family and friends -- times that are filled with happiness and meaning. Pausing at this time in your cancer treatment gives you a chance to refocus on the most important things in your life. Now is the time to do some things you've always wanted to do and to stop doing the things you no longer want to do. Though the cancer may be beyond your control, there are still choices you can make.

## **What's new in nasopharyngeal cancer research and treatment?**

Important research into nasopharyngeal cancer (NPC) is being done in many university hospitals, medical centers, and other institutions around the world. Each year, scientists find out more about what causes the disease, how to prevent it, and how to improve treatment.

### **Causes**

Many studies are looking at how Epstein-Barr virus (EBV) infection and other risk factors cause cells of the nasopharynx to become cancerous. Researchers are optimistic that these studies may eventually lead to vaccines to prevent NPC by avoiding EBV infection.

Recent discoveries about EBV, its interaction with nasopharyngeal cells, and the immune system's reaction to EBV have led to new blood tests that may help detect NPC early and better predict the response to treatment. These tests are now being studied in areas of the world where this cancer is common.

### **Treatment**

#### **New surgical techniques**

Advances in the field of skull base surgery such as the use of endoscopes in the nose now allow doctors to remove some tumors from difficult areas like the nasopharynx. This type of surgery requires a specialized team that has expertise in this field. It may offer hope for some patients with recurrent NPC and patients with the keratinizing type of NPC, which often doesn't respond to radiation therapy.

#### **New radiation therapy techniques**

Recent advances in radiation therapy have helped improve the outlook for patients with NPC. Doctors can now use 3-dimensional images (obtained by CT or MRI scans) and

computers to figure out how best to aim radiation at the cancer while limiting the radiation to normal tissues. This may lessen side effects. Intensity-modulated radiation therapy (IMRT) and stereotactic radiosurgery are examples of this highly-focused approach to treatment.

Another type of radiation uses protons instead of x-rays to kill cancer cells. Unlike x-rays, which release energy both before and after they hit their target, protons cause little damage to tissues they pass through and then release their energy after traveling a certain distance. This means that proton beam radiation may be able to deliver more radiation to the tumor and do less damage to nearby normal tissues. This approach is promising, but the machines needed to make protons are expensive, and there are only a handful of them in use in the United States at this time.

Doctors are also studying the best schedule for giving radiation therapy. External beam radiation treatments are usually given once a day, 5 days a week, for many weeks in a row. Studies are now under way to see if schedules that either give the doses over fewer days or give smaller doses twice a day might be more effective.

## **Chemotherapy**

Researchers continue to develop new chemotherapy drugs, new drug combinations, and new ways to give drugs that might be more effective against advanced NPC. Several drugs that are already used to treat other cancers, such as capecitabine, oxaliplatin, and gemcitabine, have been studied for use against NPC as well.

Clinical trials are also testing ways to best combine chemotherapy with radiation therapy. For example, studies are comparing the effectiveness of chemotherapy given before, during, or after radiation therapy.

## **Targeted therapy**

Drugs that target specific parts of cancer cells may prove to be useful against NPC and have fewer side effects than standard chemotherapy drugs.

The drug cetuximab (Erbix), which targets the EGFR protein, is already being used in some cases of NPC that recur or keep growing after treatment with chemotherapy.

Other newer drugs target a tumor's ability to develop new blood vessels, which they need in order to grow larger. These drugs are called angiogenesis inhibitors. Several of these drugs are now being tested for use against NPC, including bevacizumab (Avastin<sup>®</sup>), sorafenib (Nexavar<sup>®</sup>), and pazopanib.

## **T lymphocyte treatment**

NPC seems to be caused at least in part by infection with the Epstein-Barr virus (EBV). Although patients' immune systems can be shown to have reacted against EBV, this doesn't seem to be enough to kill the cancer. Researchers are trying to overcome this by removing T lymphocytes (immune system cells) from the blood of patients with NPC and

altering them in the lab to increase their numbers and their power to kill EBV. The cells are then injected back into the patients. Early results with small numbers of patients have been promising, and larger studies of this technique are now under way.

## **Gene therapy**

Scientists have recently discovered how certain gene mutations (changes) in nasopharyngeal cells may cause them to become cancerous. A clinical trial using a virus to replace the damaged tumor suppressor gene p53 in the cancer cells had some promising results. This approach is still being studied.

## **Additional resources for nasopharyngeal cancer**

### **More information from your American Cancer Society**

We have some related information that may also be helpful to you. These materials may be ordered from our toll-free number, 1-800-227-2345.

*After Diagnosis: A Guide for Patients and Families* (also available in Spanish)

*Caring for the Patient With Cancer at Home: A Guide for Patients and Families* (also available in Spanish)

*Pain Control: A Guide for Those With Cancer and Their Loved Ones* (also available in Spanish)

*Surgery* (also available in Spanish)

*Understanding Chemotherapy: A Guide for Patients and Families* (also available in Spanish)

*Understanding Radiation Therapy: A Guide for Patients and Families* (also available in Spanish)

*When Your Cancer Comes Back: Cancer Recurrence*

The following books are available from the American Cancer Society. Call us at 1-800-227-2345 to ask about costs or to place your order.

*American Cancer Society's Guide to Pain Control*

*Cancer in the Family: Helping Children Cope with a Parent's Illness*

*Caregiving: A Step-By-Step Resource for Caring for the Person with Cancer at Home*

*Consumers Guide to Cancer Drugs*

*Informed Decisions, Second Edition: The Complete Book of Cancer Diagnosis, Treatment, and Recovery*

## National organizations and Web sites\*

In addition to the American Cancer Society, other sources of patient information and support include:

### **National Cancer Institute**

Toll-free number: 1-800-4-CANCER (1-800-422-6237) TTY: 1-800-332-8615

Web site: [www.cancer.gov](http://www.cancer.gov)

### **National Coalition for Cancer Survivorship**

Toll-free number: 1-888-650-9127

1-877-NCCS-YES (1-877-622-7937) for some publications and Cancer Survivor Toolbox® orders

Web site: [www.canceradvocacy.org](http://www.canceradvocacy.org)

### **Support for People with Oral and Head and Neck Cancer (SPOHNC)**

Toll-free number: 1-800-377-0928

Web site: [www.spohnc.org](http://www.spohnc.org)

*\*Inclusion on this list does not imply endorsement by the American Cancer Society.*

No matter who you are, we can help. Contact us anytime, day or night, for information and support. Call us at **1-800-227-2345** or visit [www.cancer.org](http://www.cancer.org).

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1 · 800 · ACS-2345 or [www.cancer.org](http://www.cancer.org)