

SALIVARY GLAND CANCER

What Is Cancer?

Cancer develops when cells in a part of the body begin to grow out of control. Although there are many kinds of cancer, they all start because of out-of-control growth of abnormal cells.

Normal body cells grow, divide, and die in an orderly fashion. During the early years of a person's life, normal cells divide more rapidly until the person becomes an adult. After that, cells in most parts of the body divide only to replace worn-out or dying cells and to repair injuries.

Because cancer cells continue to grow and divide, they are different from normal cells. Instead of dying, they outlive normal cells and continue to form new abnormal ones.

Cancer cells can travel to other parts of the body where they begin to grow and replace normal tissue. This process, called metastasis, occurs as the cancer cells get into the bloodstream or lymph vessels of our body. When cells from a cancer like breast cancer spread to another organ like the liver, the cancer is still called breast cancer, not liver cancer.

Cancer cells develop because of damage to DNA. This substance is in every cell and directs all its activities. Most of the time when DNA becomes damaged the body is able to repair it. In cancer cells, the damaged DNA is not repaired. People can inherit damaged DNA, which accounts for inherited cancers. Many times though, a person's DNA becomes damaged from some environmental exposure, like smoking. In many cases, scientists still do not understand why a person's DNA becomes damaged and leads to cancer. Scientists still do not understand what damages a person's DNA and causes it to lead to cancer.

Cancer usually forms as a tumor. Some cancers, like leukemia, do not form tumors. Instead, these cancer cells involve the blood and blood-forming organs (bone marrow, lymphatic system, and spleen), and circulate through other tissues where they grow.

Remember that not all tumors are cancerous. Benign (noncancerous) tumors do not spread to other parts of the body (metastasize) and, with very rare exceptions, are not life-threatening.

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 drugs and often spread to different parts of the body. That is why people with cancer need treatment that is aimed at their particular kind of cancer.

Cancer is the second leading cause of death in the United States. One-half of all men and one-third of all women in the US will develop cancer during their lifetimes. Today, millions of people are living with cancer or have had cancer. The risk of developing most types of cancer can be reduced by changes in a person's lifestyle, for example, by quitting smoking and eating a

better diet. The sooner a cancer is found and treatment begins, the better are the chances for living many years.

What Is Salivary Gland Cancer?

Salivary gland cancer is not a single disease. There are actually several different salivary glands found inside and near your mouth. Several types of cancer and *benign* (noncancerous) tumors can develop in these glands.

About the Salivary Glands

Salivary glands produce *saliva*, which is the lubricating fluid found in the mouth and throat. Saliva contains enzymes that begin the process of digesting food. It also contains antibodies and other substances that help prevent infections of the mouth and throat.

There are two main types of salivary glands - the *major salivary glands* and *minor salivary glands*.

The three major salivary glands are the parotid glands, submandibular glands, and sublingual glands. They occur in pairs-- one on the left side and the other on the right. The *parotid glands*, the largest salivary glands, are found on each side of the face, just in front of the ears. The *submandibular glands* are smaller and are found on either side of the neck, under the chin and tongue area. The *sublingual glands*, which are about the same size as the submandibular, are found under the floor of the mouth, and below either side of the tongue. There are about 600-1,000 minor salivary glands, which are too small to see without a microscope. These minor salivary glands are located beneath the lining of the lips, tongue, hard and soft palate, inside the cheeks, nose, sinuses, and *larynx* (voice box).

About 80% of all salivary gland tumors begin in the parotid glands, 10%-15% start in the submandibular glands, and the rest develop in the sublingual and minor salivary glands. Tumors of the parotids are usually *benign* (noncancerous). Masses in the minor salivary glands (the smallest of salivary glands) are usually *malignant* (cancerous). Because there are so many more parotid gland tumors, a greater number of cancers are found in the parotid glands than any other salivary glands.

Types of Salivary Gland Tumors

Normal salivary glands are made up of several different types of cells; tumors can start from any of the cell types. Salivary gland tumors are named according to which of these cell types they most resemble when viewed under a microscope. The cancers are also given a numeric grade of 1, 2, or 3 based on their appearance under a microscope. Grade 1 (also called low-grade or well-differentiated) cancers look very much like normal salivary gland cells and tend to grow slowly and have a good outcome. Grade 3 cancers (also called high-grade or poorly differentiated) look quite different from normal cells, often grow and/or spread quickly, and have a poor prognosis or

outlook. Grade 2 cancers (also called intermediate-grade or moderately differentiated) have an appearance and outlook that is between grade 1 and grade 3 cancers.

Benign tumors do not spread from the salivary gland to other parts of the body and are almost never life-threatening. Removing them surgically almost always cures them. Very rarely, benign tumors may become malignant if left untreated for a long period of time or if they are not completely removed and *recur* (grow back) several times. Only *malignant* (cancerous) tumors of the salivary glands will be discussed in this document.

Benign salivary gland tumors:

Benign mixed tumor (pleomorphic adenoma)
Warthin's tumor (papillary cystadenoma lymphomatosum)
Oncocytoma
Monomorphic adenoma

Low-grade salivary gland cancers:

Acinic cell carcinoma
Mucoepidermoid carcinoma (grade 1 or 2)
Polymorphous low-grade adenocarcinoma

High-grade salivary gland cancers:

Mucoepidermoid carcinoma (grade 3)
Adenoid cystic carcinoma
Adenocarcinoma (usual type), poorly differentiated carcinoma
Malignant mixed tumor
Squamous cell carcinoma

What Are the Key Statistics About Salivary Gland Cancer?

Salivary gland cancers are very uncommon and account for less than 1% of all cancers, and about 7% of cancers of the head and neck area.

The survival rates for malignant salivary gland tumors depend on the cell type and the stage of the cancer. The stage of the cancer depends on its size and whether or not it has spread to other parts of the body. Staging is discussed in detail in the section "How is Salivary Gland Cancer Diagnosed?"

What Are the Risk Factors for Salivary Gland Cancer?

A *risk factor* is anything that increases a person's chance of getting a disease such as cancer. Different cancers have different risk factors. For example, unprotected exposure to strong

sunlight is a risk factor for skin cancer, and smoking is a risk factor for lung, laryngeal, esophageal, oral, and several other cancers. Scientists have found few risk factors that make a person more likely to develop salivary gland cancer. Even if a patient does have one or more risk factors for salivary gland cancer, it is impossible to know for sure how much that risk factor contributed to causing the cancer.

Radiation exposure: If a person has had radiation treatment to the head and neck area for some other medical reason, the risk of salivary gland cancer increases. Industrial exposure to certain radioactive substances can also increase the risk of developing salivary gland cancer.

Other industrial exposure: Some studies did not find any relationship between specific occupations and salivary gland cancer risk. Others suggest that working with certain metals (nickel alloy dust) or minerals (silica dust) may increase the risk for salivary gland cancer.

Diet: Some studies have found that a diet that is deficient in vegetables and high in animal fat increases the risk of developing salivary gland cancer.

Tobacco use: Tobacco use is known to cause squamous cell carcinomas of the mouth and throat, as well as cancers of several other organs. Tobacco use may also be a risk factor for squamous cell cancers of the salivary glands, but it probably does not affect the risk for other types of salivary gland cancers.

Family history: A high cancer risk may be inherited if many blood relatives of a family have had cancer. Very rarely, members of some of these families seem to have a higher than usual risk of developing salivary gland cancers.

Do We Know What Causes Salivary Gland Cancer?

Very little is known about what actually causes the majority of salivary gland cancers. Researchers have found that some salivary gland cancers have DNA abnormalities in certain genes. Abnormalities of some genes may change the way a cell grows or multiplies, or how the cell is recognized by the immune system. Exposure to radiation or certain carcinogens (cancer-causing chemicals) may result in these DNA changes but in most cases, their cause is not known.

Can Salivary Gland Cancer Be Prevented?

Because the cause of most salivary gland cancers is unknown, it is not possible to recommend ways to prevent them. However, avoiding certain risk factors may slightly lower the likelihood of developing salivary gland cancer. For more information, refer to the section "What Are the Risk Factors for Salivary Gland Cancer?" People who work with radioactive substances, silica dust, and nickel alloy dust should take precautions to protect themselves against exposure to these materials. The American Cancer Society recommends a diet consisting mostly of foods from plant sources, with limited consumption of high-fat foods, especially those from animal sources.

These workplace and dietary precautions may lower a person's risk of developing salivary gland cancer. Even more importantly, eating a healthy diet and avoiding exposure to radiation and carcinogens (cancer-causing chemicals) reduces the risk of developing other, more common cancers.

Can Salivary Gland Cancer Be Found Early?

In many cases, salivary gland cancer can be found early. Often patients or their health care providers notice a mass or lump within one of the salivary glands. Checking the salivary glands for lumps should be a routine part of general medical and dental checkups. Also, being alert to certain symptoms and not ignoring these symptoms can help find salivary gland cancers when treatment is likely to be most effective.

How Is Salivary Gland Cancer Diagnosed?

Signs and Symptoms of Salivary Gland Cancer

If you have any of the following problems, see a doctor right away:

A mass or lump in your face, neck or mouth

Ongoing pain in one place in your face, neck or mouth

A newly noticed difference between the size, and/or shape of the left and right sides of your face or neck

Numbness of part of the face

New weakness of the muscles on one side of the face

If there is a reason to suspect you may have salivary gland cancer, the doctor will use one or more methods to find out if the disease is really present. The first step is to take a complete medical history (medical interview) to check for risk factors and symptoms.

A physical exam will provide other information about signs of salivary gland cancer and other health problems. During your physical exam, your doctor will carefully examine the salivary gland mass and look for lymph node enlargement in the neck area. The doctor will also examine you for numbness or muscle weakness in part of your face (possibly due to spread of cancer into nerves), and any other associated problem that you may be experiencing.

Computed tomography (CT): The CT scan is an x-ray procedure that produces detailed cross-sectional images of your body. Instead of taking one picture as does a conventional x-ray, a CT scanner takes many pictures as it rotates around you. A computer then combines these pictures into an image of a slice of your body. The machine will take pictures of multiple slices of the part of your body that is being studied. This test is very useful in identifying many types of liver tumors. Often after the first set of pictures is taken you will receive an intravenous injection of a "dye" or radiocontrast agent that helps better outline structures in your body. A second set of pictures is then taken. This is a very useful test for seeing cancers.

CT scans are more tedious than regular x-rays because they take longer and you need to lie quietly on a table while they are being done. But just like other computerized devices, they are getting faster and your stay might be pleasantly short. Also, you might feel a bit confined by the machine you lie within when the pictures are being taken.

You may also have an IV through which the contrast "dye" is injected. It can also cause some flushing. Some people are allergic to the dye 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 any contrast material used for x-rays.

Magnetic resonance imaging (MRI): 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 tissue and by certain diseases. A computer translates the pattern of radio waves given off by the tissues into a very detailed image of parts of the body. A contrast material might be injected just as with CT scans. MRI scans are very helpful in looking at cancers. Sometimes they can tell a benign tumor from a malignant one.

MRI scans may be a little more uncomfortable than CT scans. First, they take longer, often up to an hour. Also, you are placed inside a tube, which is confining and can upset people with claustrophobia or fear of enclosed spaces. Finally, the machine gives off a thumping noise that you may find disturbing. However the benefits of the test outweigh any discomfort. Some facilities will provide headphones with music to block this out.

Both these tests are helpful in identifying salivary gland cancers and their characteristics. They will not only reveal tumors within a salivary gland, but may also help to spot enlarged lymph nodes.

Fine needle aspiration (FNA): This is a type of biopsy that can be done in a doctor's office or clinic. It is done with a needle similar to the ones used for routine blood tests. The doctor may numb your skin with local anesthesia. The doctor then places the needle directly into the tumor mass for about 10 seconds and pulls cells and a few drops of fluid into a syringe. These cells can then be viewed under a microscope to determine if they appear malignant (cancerous). FNA is not used in every case. In many cancers, it can help the doctor decide if surgery or other tests are needed.

How Is Salivary Gland Cancer Staged?

Staging is the process of finding out how far a cancer has spread. The *prognosis* (the outlook for survival) for people with cancer depends, to a large extent, on the cancer's stage. The stage of a salivary gland cancer is the most important factor in selecting treatment options. Staging information is obtained from the physical exam, imaging studies (CT scan, MRI, chest x-ray) and biopsy results.

The American Joint Committee on Cancer (AJCC) TNM System

The most common system used to describe the stages of salivary gland cancer is the TNM system.

T refers to the size of the primary **Tumor** and if the cancer has spread to tissues near the salivary glands.

N describes the extent of spread to *regional* (nearby) lymph **Nodes** through special lymphatic channels. *Lymph nodes* are small bean-sized collections of immune system cells that are important in fighting infections and disease. Cells from salivary gland cancer can enter these lymphatic channels and reach lymph nodes in the neck area.

M indicates whether the cancer has **Metastasized** (spread) to other organs of the body.

Using the TNM staging system, information about the tumor, lymph nodes, and metastasis is combined to assign a stage. This process is called stage grouping. The stage is described in Roman numerals from I to IV. Your chance for cure is better if the stage of your cancer is low. If you have any questions about your stage or how it affects your treatment options, ask your doctor.

Stage I:

The cancer is smaller than 4 centimeters (1½ inches). It has not spread outside the salivary gland.

Stage II:

The cancer has spread outside the gland to surrounding face or neck tissues *or*,

The cancer is between 4 centimeters (1½ inches) and 6 centimeters (2½ inches) and has not spread outside the gland.

Stage III:

The cancer is smaller than 1½ inches but has spread to one nearby lymph node on the same side of the neck that is smaller than 3 centimeters (1¼ inches).

Stage IV:

The cancer is larger than 6 centimeters (2½ inches) *or*

The cancer invades into the facial nerve (runs through the parotid gland) or the base of the skull
or

The cancer is between 4 centimeters (1½ inches) and 6 centimeters (2½ inches) and has spread to one nearby lymph node on the same side of the neck that is smaller than 3 centimeters (1¼ inches) *or*

The cancer is any size and has spread to one nearby lymph node on the same side of the neck that is larger than 3 centimeters (1¼ inches) or has spread to several nodes of any size on either side of the neck *or*

The cancer has spread to distant organs

When all types of salivary gland cancer are considered together, the 10-year survival rate for stage I is about 90%. For stage II cancers, it is 65% and it is 22% for stage III cancers. It is lower for stage IV. These are only approximate numbers because your survival will also depend on the grade and type of your cancer.

The 10-year survival rate refers to the percentage of patients who live at least 10 years after their cancer is diagnosed. Many of these patients live much longer than 10 years after diagnosis, and 10-year rates are used to produce a standard way of discussing prognosis. Ten-year *relative* survival rates exclude from the calculations patients dying of other diseases, and are considered to be a more accurate way to describe the prognosis for patients with a particular type and stage of cancer. Of course, 10-year survival rates are based on patients diagnosed and initially treated more than 10 years ago. Improvements in treatment often result in a more favorable outlook for recently diagnosed patients.

How Is Salivary Gland Cancer Treated?

The treatment options for salivary gland cancer are surgery, radiation therapy, and less often, chemotherapy. These treatments can be used alone or in combination, depending on the type and stage of the cancer.

After the cancer is found and staged, your cancer care team will discuss *treatment options* (choices) with you. It is important to take time and think about all of the choices. In choosing a treatment plan, factors to consider include your overall physical health, the type and stage of the cancer, the probability of curing the disease, and the impact of the treatment on functions like speech, chewing, and swallowing.

It is often a good idea to seek a second opinion, especially from a doctor experienced in treating salivary gland tumors. A second opinion can provide more information and help you feel more confident about the treatment plan you chose. Some insurance companies require a second opinion before they will agree to pay for certain treatments.

Surgery

In most cases surgery will be used to remove the cancer and some of the surrounding salivary gland or soft tissue. If the cancer is high grade (more likely to grow and spread quickly) or if it has already spread to lymph nodes, the head and neck surgeon will usually remove lymph nodes from the side of the neck by an operation called a *neck dissection*. Before surgery, ask your surgeon exactly what will be done during the operation is planned, whether there are other

options, and what side effects you can expect. Make sure that your surgeon is experienced in the surgery.

Salivary gland surgery: Since salivary gland tumors occur in the parotid gland about 80% of the time, we will first describe surgery of the parotid gland. Surgery is complicated by the fact that the facial nerve, which controls movement on the same side of the face, passes through the gland.

Most parotid gland cancers start in the outside part of the gland, called the superficial lobe. These can be treated by removing only the superficial lobe. This will usually spare the facial nerve and not interfere with facial movement.

If your cancer involves deeper tissues, the surgeon will remove the entire gland and might also remove your facial nerve. If your surgeon feels he might have to do this, ask about operations to repair the nerve and ways to treat side effects caused by removing the nerve. If the cancer has invaded other tissues near your parotid gland, these tissues might also need to be removed.

If your cancer is in the submandibular or sublingual glands, the surgeon will remove the entire gland and perhaps some of the surrounding tissue or bone. Several important nerves pass through or near these glands. These nerves control tongue movement as well as sensation and taste. Depending on the size and location of the cancer, the surgeon may need to remove some of these nerves.

Minor salivary gland cancers can occur in your lips, tongue, hard and soft palate, oral cavity, throat, voicebox, nose, and sinuses. The surgeon will usually remove some surrounding tissue along with the cancer. The exact details of surgery depend on the size and location of the cancer.

With any salivary gland cancer surgery, the surgeon may need to cut through your skin or your mouth. You can have problems with wound healing, infections, or excessive bleeding during or after surgery. If certain nerves were injured during surgery, you may lose control of your facial muscles on the side the surgery was done on and your mouth will droop.

Sometimes, nerves cut during surgery can grow back abnormally and become connected to the sweat glands of the face. This condition, called Frey's syndrome, results in flushing or sweating over areas of your face when you chew. Frey's syndrome can be treated with medications or with additional surgery.

Neck Dissection: When a salivary gland cancer is high grade and/or has already spread to the lymph nodes, your surgeon will want to perform a *neck dissection*. Although there are many types of neck dissections their major purpose is to remove lymph nodes that might contain cancer. In doing this, the surgeon will often need to remove other tissues such as connective tissue, muscle, nerve, and blood vessels from one side of your neck.

If you have a neck dissection you may experience numbness of the ear, weakness in raising your arm above your head, and weakness of the lower lip. These may get better with time. You can be

helped by *physical therapists* who will teach you exercises to improve your neck and shoulder movement.

Radiation Therapy

Radiation therapy uses high energy radiation to kill cancer cells. *External beam* radiation therapy focuses radiation from outside the body on the cancer. This is the general type of radiation therapy often used to treat salivary gland cancer. External beam radiation therapy usually involves having treatments 5 days a week for a period of approximately 6 weeks. It is not an uncomfortable procedure. Once the radiation fields have been set up, which takes several hours at the beginning, your visit will take only a few minutes each day. The procedure is not too different from having an x-ray examination.

Some special types of radiation therapy are useful in treating salivary gland cancer. One type is called *fast neutron beam radiation*.

Radiation therapy is sometimes used as the *primary* (main) treatment of salivary gland cancer, especially if your general health is too poor to have surgery or if your cancer is too large to be removed completely by surgery. If your primary treatment is surgery, *adjuvant* (additional) radiation therapy can be used to kill very small deposits of cancer that cannot be seen and removed during surgery. Radiation therapy can also be used to *palliate* (ease) symptoms caused by the spread of salivary gland cancer, such as pain, bleeding, and difficulty swallowing.

External beam radiation may cause skin changes like a sunburn or suntan that slowly fades away. Fortunately, for most major salivary gland cancers radiation can be confined to the affected side. Therefore, permanent side effects such as dry mouth and thyroid gland injury can be prevented. In rare occasions, it is necessary to irradiate both sides of your face and neck. This can damage your thyroid gland and you may need to take pills to replace thyroid hormones. Other salivary glands may be injured, resulting in a permanently dry mouth. In addition to discomfort, dry mouth can promote tooth decay. Radiation can also cause a temporary sore throat, hoarseness, difficulty swallowing, partial or complete loss of taste, bone pain, bone damage, and fatigue.

There are ways to relieve many of these side effects, so it is important to discuss these symptoms with your cancer care team.

Dental Evaluation: If your doctors plan to treat your salivary gland cancer with radiation therapy, you will need a dental evaluation. Depending on the expected radiation plan and the condition of your teeth, it may be necessary to remove some or all of them. They may be removed either by the head and neck surgeon or an oral surgeon.

Chemotherapy

Systemic chemotherapy uses anticancer drugs that are injected into a vein or given by mouth. These drugs enter the bloodstream and reach all areas of the body, making this treatment potentially useful for cancers that have *metastasized* (spread) to distant organs.

Chemotherapy drugs kill cancer cells but also damage some normal cells, which can lead to side effects. Any side effects you may have from chemotherapy depend on the types of drugs, the amount taken, and the length of treatments.

Temporary side effects might include nausea and vomiting, loss of appetite, loss of hair, and mouth sores. Because chemotherapy can damage the blood-producing cells of the bone marrow, the blood cell counts might become low. This can result in an increased chance of infection (due to a shortage of white blood cells), bleeding or bruising after minor cuts or injuries (due to a shortage of blood platelets), and shortness of breath (due to low red blood cell counts). Fatigue is also quite common and may be caused by low red cell counts, by other reasons related to the chemotherapy, or the cancer itself.

Most side effects disappear once treatment is stopped. Your hair will grow back after treatment ends. Anyone who has side effects should talk with their cancer care team. There are remedies for many of the temporary side effects of chemotherapy. For example, *antiemetic* (antinausea) drugs can be given to prevent or reduce nausea and vomiting. Other drugs called growth factors can be given to help the bone marrow recover after chemotherapy.

Chemotherapy is not often used to treat salivary gland cancers. This treatment is usually limited to patients who have metastases to distant organs and patients whose cancers could not be controlled by surgery and radiation therapy. Although chemotherapy sometimes shrinks the tumor when used in these patients, it does not cure this type of cancer.

Some of the chemotherapy drugs used to treat salivary cancers include cisplatin, doxorubicin, 5-fluorouracil, cyclophosphamide, and methotrexate. They may be used alone, or more often, in combination with one another. New chemotherapy drugs and combinations of drugs are currently being studied.

Clinical Trials

The purpose of clinical trials: Studies of promising new or experimental treatments in patients are known as clinical trials. A clinical trial is only done when there is some reason to believe that the treatment being studied may be of value to the patient. Treatments used in clinical trials are often found to have real benefits. Researchers conduct studies of new treatments to answer the following questions:

- Is the treatment helpful?
- How does this new type of treatment work?
- Does it work better than other treatments already available?
- What side effects does the treatment cause?
- Are the side effects greater or less than the standard treatment?
- Do the benefits outweigh the side effects?

- In which patients is the treatment most likely to be helpful?

Types of clinical trials: There are three phases of clinical trials in which a treatment is studied before it is eligible for approval by the Food and Drug Administration (FDA).

Phase I clinical trials: The purpose of a Phase I study is to find the best way to give a new treatment and determine how much of it can be given safely. Physicians watch patients carefully for any harmful side effects. The treatment has been well tested in laboratory and animal studies, but the side effects in patients are not completely known. Doctors conducting the trial will start by giving very low doses of the drug to the first patients and increasing the dose for later groups of patients until side effects appear. Although doctors are hoping to help patients, the real purpose of a phase I trial is to test the safety of the drug.

Phase II clinical trials: These are designed to see if the drug works. Patients are given the highest dose that doesn't cause severe side effects (determined from the phase I trial) and closely observed for an anticancer effect. The doctors will also look for side effects.

Phase III clinical trials: These Phase III studies involve large numbers of patients. Some clinical trials may enroll thousands of patients. One group (the control group) will receive standard (the most accepted) treatment. The other groups will receive the new treatment. Usually doctors study only one new treatment to see if it works better than the standard treatment, but sometimes they will test 2 or 3. All patients in Phase III studies are closely watched. The study will be stopped if the side effects of the new treatment are too severe or if one group has had much better results than the others.

If you are in a clinical trial, you will receive excellent care. You will have a team of experts looking at you and monitoring your progress very carefully. The study is especially designed to pay close attention to you.

However, there are some risks. No one involved in the study knows in advance whether the treatment will work or exactly what side effects will occur. That is what the study is designed to discover. While most side effects will disappear in time, some can be permanent or even life threatening. Keep in mind, though, that even standard treatments have side effects. Depending on many factors, you may decide to enroll in a clinical trial.

Deciding to enter a clinical trial: Enrollment in any clinical trial is completely up to you. Your doctors and nurses will explain the study to you in detail and will give you a form to read and sign indicating your desire to take part. This process is known as giving your informed consent. Even after signing the form and after the clinical trial begins, you are free to leave the study at any time, for any reason. Taking part in the study does not prevent you from getting other medical care you may need.

To find out more about clinical trials, ask your cancer care team. Among the questions you should ask are:

- What is the purpose of the study?

- What kinds of tests and treatments does the study involve?
- What does this treatment do?
- What is likely to happen in my case with, or without, this new research treatment?
- What are my other choices and their advantages and disadvantages?
- How could the study affect my daily life?
- What side effects can I expect from the study? Can the side effects be controlled?
- Will I have to be hospitalized? If so, how often and for how long?
- Will the study cost me anything? Will any of the treatment be free?
- If I am harmed as a result of the research, what treatment would I be entitled to?
- What type of long-term follow-up care is part of the study?
- Has the treatment been used to treat other types of cancers?

You can get a list of current clinical trials by calling the National Cancer Institute's Cancer Information Service toll free at 1-800-4-CANCER or visiting the NCI clinical trials web sites for patients (cancertrials.nci.nih.gov) or health care professionals (cancernet.nci.nih.gov/prot/protsrch.shtml).

Complementary and Alternative Therapies

There is a great deal of interest today in complementary and alternative treatments for cancer. Before changing your treatment or adding any methods of your own, be sure to talk to your doctor or nurse. Some methods can be safely used along with standard medical treatment. Others, however, can interfere with standard treatment or cause serious side effects. That is why it's important to talk openly with your doctor. For more information, please see "Complementary and Alternative Methods of Cancer Treatment."

Treatment Options by Type and Stage of Salivary Gland Cancer

Stage I: If you have stage I salivary gland cancer your doctors will probably recommend that you have surgery to remove the cancer and part or all of the gland. Post-operative (after surgery) radiation may be recommended if you have a high grade cancer or if it could not be completely removed. The surgeon may also remove lymph nodes in the neck on the same side to see if they contain cancer.

Stage II: Stage II salivary gland cancers are also treated by surgery. The surgery may be more extensive (covering a wider area) than for stage I cancers. The surgeon may also remove lymph nodes in your neck on the same side to see if they contain cancer. Radiation therapy may be given after surgery if your cancer is high-grade or if your cancer was not completely removed. This often occurs when the cancer has grown beyond the salivary gland into nearby nerves or tissues.

Stage III: If you have stage III salivary gland cancer your doctors will generally recommend radical surgery (removal of your tumor and all lymph nodes in your neck on the same side) combined with radiation therapy. Radiation therapy may be used as the only treatment (without surgery) if removing the cancer by surgery would cause serious problems with your eating, speech, or appearance.

Stage IV: Because of the size and extent of spread of stage IV salivary gland cancer, cure is usually not considered possible. Radiation therapy is often used as the main treatment in this situation to relieve pain, bleeding, or disfigurement from the cancer. If you have metastases, chemotherapy may help relieve your symptoms.

Recurrent salivary gland cancer: Treatment of the recurrent cancer depends on its location, your general health, and prior treatments. Surgery is attempted when possible. Radiation therapy is often used. Chemotherapy, usually as part of a clinical trial, is an option for some patients with recurrent salivary gland cancer.

What Should You Ask Your Doctor About Salivary Gland Cancer?

It is important to have honest, open discussions with your cancer care team. Consider these questions:

- What kind of salivary gland cancer do I have? Which salivary gland is affected?
- Is my cancer high grade (very aggressive) or low grade?
- Has my cancer spread beyond the primary site?
- What is the stage of my cancer and what does that mean in my case?
- What treatment choices do I have?
- What treatment do you recommend and why?
- Based on what you've learned about my cancer, what is my prognosis?
- What risks or possible side effects are there to the treatments you suggest?
- What are the chances my cancer will recur with these treatment plans?
- What should I do to be ready for treatment?

In addition to these sample questions, be sure to write down some of your own. For instance, you might want more information about your recovery time so you can plan your work schedule. Or, you may want to ask about second opinions or about clinical trials for which you may qualify.

What Happens After Treatment for Salivary Gland Cancer?

Follow-up: Early recognition of recurrent cancer or therapy-related side effects will improve your chance for effective treatment.

It is important to have regular follow-up physical examinations and to report any new symptoms to your doctor right away.

Because many types of salivary gland cancer grow slowly and sometimes come back 10 or more years after treatment, your doctors will want to follow you for a long time.

Your doctors might order imaging studies (CT scan, MRI, chest x-ray) to watch for a recurrence, metastasis, or for a new tumor or to evaluate a new mass or symptom. If a new mass is found a fine needle aspiration biopsy or excisional biopsy (surgical removal of the mass) may be performed to determine if it is due to recurrent cancer or a benign (noncancerous) cause, such as an infection or scar tissue formation.

Reconstructive surgery: Any functional or cosmetic problem that may have occurred during treatment is often addressed some time after therapy has ended. There are many surgical and nonsurgical techniques that can be used to correct these problems.

Other things to consider: During and after treatment you may be able to speed up your recovery and improve your quality of life by taking an active role. Learn about the benefits and disadvantages of each of your treatment options, and ask questions of your cancer care team if there is anything you do not understand. Learn about and look out for side effects of treatment, and report these promptly to your cancer care team so that they can take steps to minimize them and shorten their duration.

Remember that your body is as unique as your personality and your fingerprints. Although understanding your cancer's stage and learning about the effectiveness of your treatment options can help predict what health problems you may face, no one can predict precisely how you will respond to cancer or its treatment.

You may have special strengths such as a history of excellent nutrition and physical activity, a strong family support system, or a deep faith, and these strengths may make a difference in how you respond to cancer. In fact, behavioral scientists have recently found that some people who took advantage of a social support system, such as a cancer support group, survived with a better quality of life. There are also experienced professionals in mental health services, social work services and pastoral services who may assist you in coping with your illness.

If you are being treated for cancer, be aware of the battle that is going on in your body. Radiation therapy and chemotherapy add to the fatigue caused by the disease itself. Give your body all the rest it needs so that you will feel better as time goes on. Exercise once you feel rested enough. Ask your cancer care team whether your cancer or its treatments might limit your exercise program or other activities.

A cancer diagnosis and its treatment are major life challenges, with an impact on you and everyone who cares for you. Before you get to the point where you feel overwhelmed, consider attending a meeting of a local support group. There are many groups available that provide emotional support, friendship, and understanding. Your health care team can suggest other organizations that might help you during your recovery from treatment. If you need individual assistance in other ways, contact your hospital's social service department or call us (1-800-ACS-2345) for help in contacting counselors or other services.

What's New In Salivary Gland Cancer Research and Treatment?

Research on the causes and treatment for salivary gland cancer is now being done at many medical centers across the nation. Recent laboratory research has found certain consistent changes in chromosomes and genes of various types of salivary gland cancers. Further study of these changes may help us understand the cause of these cancers and suggest new treatments.

Current clinical research also addresses what types of surgery, radiation therapy, and chemotherapy have the best cure rate for specific salivary gland cancer types and stages. Advances in surgical techniques have enabled teams of head and neck surgeons and neurosurgeons to remove cancers that have spread near the base of the skull. These operations were not considered possible a few years ago but are becoming more common and successful. Reconstructive surgery is becoming more sophisticated and successful. This permits more extensive surgery to be done and improves patients' quality of life after treatment. Advances in radiation therapy now permit more precise targeting of radiation. Some types of radiation, such as fast neutron beam radiation and conformal radiation therapy have been found to be particularly useful, but require specialized equipment that is not available in many hospitals.

Because advanced salivary gland cancer is rare, knowledge about treating these cancers with chemotherapy is still evolving. New chemotherapy drugs are expected to provide more options for people with advanced salivary gland cancer.

Additional Resources

National Organizations and Web Sites

The following organizations can provide additional information and resources.*

Let's Face It USA
Telephone: 1-360-676-7325
Internet Address: www.faceit.org/letsfaceit/

National Cancer Institute
Telephone: 1-800-4-CANCER
Internet Address: www.nci.nih.gov

Support for People with Oral and Head and Neck Cancer, Inc. (SPOHNC)
Telephone: 1-800-377-0928
Internet Address: www.spohnc.org

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

American Cancer Society Publications

After Diagnosis: A Guide for Patients and Families (Booklet; Code #9440.00)

Caring for the Patient with Cancer at Home (Booklet; Code#4656.00)

Understanding Chemotherapy: A Guide for Patients and Families (Booklet; Code #9458.00)

Understanding Radiation Therapy: A Guide for Patients and Families (Booklet; Code #9459.00)

Other Publications*

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

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