About Adrenal Cancer

Overview

If you have been diagnosed with adrenal cancer or are worried about it, you likely have a lot of questions. Learning some basics is a good place to start.

- What Is Adrenal Cancer?

Research and Statistics

See the latest estimates for new cases of adrenal cancer and deaths in the US and what research is currently being done.

- Key Statistics for Adrenal Cancer
- What's New in Adrenal Cancer Research?

What Is Adrenal Cancer?

About the adrenal glands

The adrenals are small glands that sit above each of the kidneys. The kidneys are located deep inside the upper part of the abdomen.
Each adrenal gland has 2 parts. The outer part, the cortex, is where most tumors develop. The cortex makes certain hormones for the body. These hormones all have a similar chemical structure and are called steroids:

- **Cortisol** causes changes in metabolism to help the body to handle stress.
- **Aldosterone** helps the kidneys regulate the amount of salt in the blood and helps regulate blood pressure.
- **Adrenal androgens** can be converted to more common forms of the sex hormones estrogen and testosterone in other parts of the body. The amount of these hormones that result from conversion of adrenal androgens is small compared to what is made in other parts of the body. The testicles produce most of the androgens (male hormones) in men. The ovaries produce most of the estrogens (female hormones) in women.
The inner part of the adrenal gland, the medulla, is really an extension of the nervous system. Nervous system hormones such as norepinephrine and epinephrine (also called adrenaline) are made in the medulla. Tumors and cancers that start in the adrenal medulla include pheochromocytomas (which are most often benign) and neuroblastomas.

Tumors and cancers of the adrenal cortex are covered here, but tumors of the adrenal medulla are not. Neuroblastomas are covered separately elsewhere.

**Adrenal cortex tumors**

The 2 main types of adrenal cortex tumors are:

- **Adenomas** (benign or non-cancerous tumors)
- **Carcinomas** (malignant or cancerous tumors)

These types of tumors can sometimes be hard to tell apart when the cells are looked at under the microscope. Sometimes the only way to know for sure that an adrenal tumor is a cancer is when it spreads to lymph nodes or other organs and tissues. Adenomas do not spread outside the adrenal gland.

**Adrenal cortex adenomas**

Most tumors of the adrenal cortex are benign tumors known as adenomas. These tumors are usually less than 2 inches (5 centimeters) across. They usually occur in only one adrenal gland, but sometimes both.

Most people with adrenal adenomas have no symptoms and don't know that they have an adrenal tumor. Some of these adenomas are discovered by accident (incidentally) when CT or MRI scans of the abdomen are done because of an unrelated health problem. About 5% of people who have a CT scan of the abdomen are found to have an adrenal tumor that was not suspected. Many of these are nonfunctional, meaning that they don't make adrenal hormones. Sometimes these tumors are known by the nickname incidentalomas because they aren't causing problems and were only found by accident.

Some adenomas make too many adrenal steroid hormones. Sometimes the excess hormones can cause the same symptoms as those from adrenal carcinomas (cancers). To learn more, see [Signs and Symptoms of Adrenal Cancers](#). Adenomas are much more likely than carcinomas to make high levels of aldosterone, which can cause high blood pressure.
**Treatment:** Adenomas can be cured by removing the adrenal gland that contains the adenoma. Some adrenal adenomas that cause hormone-related symptoms can be treated effectively with drugs that block the production or actions of these hormones. This may be the best treatment choice for patients with other serious medical problems who might not be able to have a major operation.

The treatment of an adenoma depends on the chance that it may be a cancer and whether or not it is raising hormone levels. When an adrenal tumor is found accidentally, tests are often done to see if it is making hormones. If it is, surgery is often recommended. Otherwise, surgery may only be recommended if it is likely to be a cancer. Small tumors are less likely to be cancer, and are often watched but not treated right away. The CT (or MRI) scan can be repeated in 6 to 24 months to see if the tumor has grown. If it has, it may need to be removed. If it hasn't grown, hormone levels will be watched over the next few years. If the tumor stays small and doesn't make any hormones, it might not need to be treated at all.

**Adrenal cortex cancer**

The type of cancer that develops in the cortex of the adrenal gland is called adrenal cortical carcinoma or just adrenal cancer. This rare type of cancer is also known as adrenocortical cancer (or carcinoma).

Adrenal cancer most often is discovered when:

- It is found accidentally on an imaging test done to look for something else.
- It makes hormones that cause changes such as weight gain and fluid retention, early puberty in children, or excess facial or body hair growth in women.
- It starts causing symptoms because it has gotten very large. Large tumors can press on other organs in the abdomen, causing pain or a feeling of fullness.

Generally, adrenal cancers are much larger than adrenal adenomas. An adrenal tumor larger than 5 or 6 centimeters (about 2 to 2 1/2 inches) is assumed to be a cancer. In one study, the average size of an adrenal cancer was about 13 cm (5 inches).

Most cancers found in the adrenal gland did not start there and are not adrenal cancers. Instead, they started in other organs or tissues and then spread (metastasize) through the bloodstream to the adrenal glands. For example, lung cancers, melanomas, and breast cancers often spread to the adrenals. When other cancers spread to the adrenals, they are not considered adrenal cancer. They are named and treated based on the place where they started.
Key Statistics for Adrenal Cancer

Adrenal cancers (carcinomas) are very rare, and the exact number diagnosed in the United States each year is not known. It is probably around 200 per year. These cancers are much less common than benign adrenal tumors (adenomas), which are found fairly often among middle aged and elderly people. Adrenal tumors (most of which are benign adenomas) are found in about 1 in every 10 people who have an imaging test (like a CT or MRI) of the adrenal gland.

The average age of patients with adrenal cancer is around 46, but adrenal cancer can
occur in people of any age, even in children.

Visit the American Cancer Society’s Cancer Statistics Center for more key statistics.

- References


What's New in Adrenal Cancer Research?

Important research on adrenal cancer currently is being done in hospitals and institutions around the world. Scientists are learning more about what causes the disease and how best to treat it. Progress in this research, however, tends to be slow because adrenal cancer is so rare. Studies of more general aspects of cancer that can be applied to adrenal cancers as well as other types of cancers are also being done.

Chemotherapy

Although adrenal cancer can be hard to study, experts are looking for new drugs that may help, as well as looking at the value of accepted treatments.

One important ongoing study (called ADIUVO) is testing the value of mitotane in treating patients with early-stage adrenal cancers that have been removed with surgery. The goal of the study is to see if mitotane lowers the chance of the cancer coming back and...
helps patients live longer.

**Targeted therapy**

Researchers are working to understand the genetic changes that cause adrenal cancers so that newer treatments can be found to target these changes.

*Targeted therapy* is a newer type of cancer treatment that uses drugs or other substances to attack the programming that makes cancer cells different from normal, healthy cells. Each type of targeted therapy works differently, but all alter the way a cancer cell grows, divides, repairs itself, or interacts with other cells.

A few targeted drugs have been studied for treating adrenal cancer, but so far they have not been found to be helpful. However, scientists continue to look for drugs to block the effects of certain hormones that might help adrenal cancer cells grow. One of these hormones is called *insulin-like growth factor 2* (IGF2).

Some studies are being done to better understand IGF2 and other hormones to know if targeted drugs may be helpful in adrenal cancer.

**Genetics**

Scientists are learning how changes in certain genes cause normal adrenal cortex cells to become cancerous. Understanding these genetic changes will help doctors develop better methods to diagnose this disease as well as treatments that are more effective and have fewer side effects than those currently available. Medical centers involved in research might ask their patients for blood samples and about diseases in other family members to learn more about adrenal cancer, as part of studies. These studies are different from treatment studies. The goal of these studies is to enhance research of this rare cancer, to learn more about how adrenal cancer forms, and in the future find new targets for adrenal cancer therapy.

For example, there have been several studies looking at which hereditary syndromes, such as Lynch syndrome, lead to a higher risk for adrenal cancer. (These syndromes are discussed in *Risk Factors for Adrenal Cancer.*) International groups are working to understand how adrenal cancer develops. Hopefully, these efforts will provide better targets for therapy.

- **References**

  *Analysis of rare endocrine cancer reveals novel genetic alterations* [press release].


Online Mendelian Inheritance in Man, OMIM (TM). McKusick-Nathans Institute of Genetic Medicine, Johns Hopkins University (Baltimore, MD) and National Center for


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Adrenal Cancer Causes, Risk Factors, and Prevention

Risk Factors

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

- Adrenal Cancer Risk Factors
- What Causes Adrenal Cancer?

Prevention

Since there are no known preventable risk factors for this cancer, it is not possible to prevent this disease.

Adrenal Cancer Risk Factors

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

Scientists have found few risk factors that make a person more likely to develop adrenal cancer. Even if a patient does have one or more risk factors for adrenal cancer, it is impossible to know for sure how much that risk factor contributed to causing the cancer.

But having a risk factor, or even several, does not mean that you will get the disease. Many people with risk factors never develop adrenal cancer, while others with this disease may have few or no known risk factors.
Genetic syndromes

The majority of adrenal cortex cancers are not inherited (sporadic), but some (up to 15%) are caused by a genetic defect. This is more common in adrenal cancers in children.

Li-Fraumeni syndrome

The Li-Fraumeni syndrome is a rare condition that is most often caused by a defect in the TP53 gene. People with this syndrome have a high risk of several types of cancer, including breast cancer, bone cancer, brain cancer, and adrenal cortex cancer.

Beckwith-Wiedemann syndrome

People with this problem have large tongues, are large themselves, and have an increased risk for developing cancers of the kidney, liver and adrenal cortex.

Multiple endocrine neoplasia (MEN1)

People with MEN1 have a very high risk of developing tumors of 3 glands: the pituitary, parathyroid, and pancreas. About one-third to one-half of people with this condition also develop adrenal adenomas (benign tumors) or enlarged adrenal glands. These usually do not cause any symptoms. This syndrome is caused by defects in a gene called MEN1. People who have a family history of MEN1 or pituitary, parathyroid, pancreas, or adrenal cancers should ask their doctor if they might benefit from genetic counseling.

Familial adenomatous polyposis (FAP)

People with this syndrome develop hundreds of polyps in the large intestine. These polyps will lead to colon cancer if the colon is not removed. FAP also increases the risk of other cancers, and may increase the risk for adrenal cancer. Still, most adrenal tumors in patients with FAP are benign adenomas. This syndrome is caused by defects in a gene called APC.

Lynch syndrome or hereditary nonpolyposis colorectal cancer (HNPCC)

Lynch syndrome (formerly known as HNPCC) is an inherited genetic disorder that increases the risk of colorectal cancer, stomach cancer, and some other cancers,
including adrenal cortex cancer. In most cases, this disorder is caused by a defect in either the \textit{MLH1} or \textit{MSH2} gene, but other \textit{genes} can cause Lynch syndrome, including \textit{MLH3, MSH6, TGFBR2, PMS1}, and PMS2. Lynch syndrome is discussed in more detail in \textit{Colorectal Cancer}.

**Lifestyle and environmental factors**

Risk factors such as being overweight, smoking, living a sedentary lifestyle, and being exposed to cancer-causing substances in the environment can affect a person's risk of many types of cancer. Although none of these factors has been found to definitely influence a person's risk of developing adrenal cancer, smoking has been suggested as a risk factor by some researchers.

- **References**


  Online Mendelian Inheritance in Man, OMIM (TM). McKusick-Nathans Institute of Genetic Medicine, Johns Hopkins University (Baltimore, MD) and National Center for Biotechnology Information, National Library of Medicine (Bethesda, MD), 07/26/16. Available at www.ncbi.nlm.nih.gov/omim/.

What Causes Adrenal Cancer?

We do not know exactly what causes most adrenal cortical tumors. Over the past several years, experts have made great progress in understanding how certain changes in a person's DNA can cause cells in the adrenal gland to become cancerous. DNA is the chemical in our cells that makes up our genes, which controls nearly everything the cells do. We usually look like our parents because they are the source of our DNA. But DNA affects more than just the way we look. It also determines our risk for developing certain diseases, including some types of cancer.

- Genes that help our cells grow and divide are called **oncogenes**.
- Genes that slow down cancer cell division or make them die at the right time are called **tumor suppressor genes**.

Cancers can be caused by DNA mutations (changes) that turn on oncogenes or turn off tumor suppressor genes. Some people with cancer have inherited DNA mutations from a parent, which increase their risk for developing the disease. But most DNA mutations that are seen in cancers happen during life rather than having been inherited. Some of these mutations may result from exposure to things like radiation or cancer-causing chemicals. But most of these mutations seem to happen for no apparent reason, without having an outside cause.

Some of the DNA mutations that cause adrenal tumors in people with genetic syndromes are discussed in **Adrenal Cancer Risk Factors**. Overall though, these rarely cause adrenal cortical cancer. However, because adrenal cancer is so rare, if you have adrenal cancer, it may be worthwhile to consider **genetic testing** to find out if you have one of these syndromes. If you do, you (and your family members) might have an increased risk of developing other cancers also.
The Li-Fraumeni syndrome is caused by inherited mutations that inactivate the TP53 tumor suppressor gene. This syndrome causes a small portion of adrenal cancer in adults (about 1 of every 20), but it's often the cause of adrenal cancer in children. In fact, about 8 of every 10 cases of adrenal cancer in children are caused by Li-Fraumeni syndrome. Many other adrenal cancers have also been found to have TP53 gene changes that were acquired after birth (not inherited).

- References


Online Mendelian Inheritance in Man, OMIM (TM). McKusick-Nathans Institute of Genetic Medicine, Johns Hopkins University (Baltimore, MD) and National Center for Biotechnology Information, National Library of Medicine (Bethesda, MD), 07/26/16. Available at www.ncbi.nlm.nih.gov/omim/.


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Can Adrenal Cancer Be Prevented?

Since there are no known preventable risk factors for this cancer, it is not possible to prevent this disease at this time.
Adrenal Cancer Early Detection, Diagnosis, and Staging

Detection and Diagnosis

Catching cancer early often allows for more treatment options. Some early cancers may have signs and symptoms that can be noticed, but that is not always the case.

- Can Adrenal Cancer Be Found Early?
- Signs and Symptoms of Adrenal Cancers
- Tests for Adrenal Cancer

Stages and Outlook (Prognosis)

After a cancer diagnosis, staging provides important information about the extent of cancer in the body and anticipated response to treatment.

- Adrenal Cancer Stages
- Survival Rates for Adrenal Cancer

Questions to Ask About Adrenal Cancer

Here are some questions you can ask your cancer care team to help you better understand your cancer diagnosis and treatment options.

- Questions to Ask About Adrenal Cancer

Can Adrenal Cancer Be Found Early?

It is hard to find adrenal cancers early, and they are often quite large by the time they are diagnosed.
Adrenal cancers are often found earlier in children than in adults because cancers in children are more likely to secrete hormones that lead to signs and symptoms. For example, children may develop signs of puberty at an early age due to sex hormones made by adrenal cancer cells.

These tumors are sometimes found early by accident in adults, such as when a CT (computed tomography) scan of the abdomen is done for some other health concern.

The American Cancer Society has official recommendations for the early detection of several types of cancer. But because adrenal cancers occur so rarely, the Society does not recommend routine testing for this cancer in people without any symptoms.

**References**


Signs and Symptoms of Adrenal Cancers

In about half of people with adrenal cancer, symptoms are caused by the hormones made by the tumor. In the other half, symptoms occur because the tumor has grown so large that it presses on nearby organs. If you or your child has any of the signs or symptoms described here, discuss them with your doctor without delay. These symptoms may be caused by an adrenal tumor or by something else. Getting the proper medical tests is the only way to find out and to get the proper treatment, if needed.
Symptoms caused by androgen or estrogen production

In children, symptoms are most often caused by the androgens (male-type hormones) that the tumor secretes. The most common symptoms are excessive growth of facial and body hair (such as in the pubic and underarm areas). Male hormones may also enlarge the penis in boys or the clitoris in girls.

If the tumor secretes estrogens (female-type hormones), girls can start puberty early. This can cause breasts to develop and menstrual periods to start. Estrogen-producing tumors can also enlarge breasts in boys.

The symptoms from high levels of sex hormones are less noticeable in adults because they have already gone through puberty and have breasts and adult patterns of body hair. Women with estrogen-producing tumors and men with androgen-producing tumors usually do not have any symptoms from the hormones, so they might not have symptoms until the tumor is large enough to press on nearby organs.

Symptoms are easier to notice if the tumor is making the hormone usually found in the opposite sex. For example, men with tumors that make estrogen may notice their breasts becoming enlarged and tender. They may also have sexual problems such as erectile dysfunction (impotence) and loss of sex drive. Women with tumors that make androgens (male hormones) may notice excessive facial and body hair growth, a receding hairline, irregular menstrual periods, and deepening of their voice.

Symptoms caused by cortisol production

Excessive levels of cortisol causes a problem known as Cushing syndrome. Some people have all of these symptoms, but many people with high cortisol levels have only a few. Possible signs and symptoms include:

- Weight gain, usually greatest above the collar bone, in the cheek area (moon face), and around the abdomen
- Fat deposits behind the neck and shoulders (fatty hump or buffalo hump)
- Purple stretch marks on the abdomen
- Excessive hair growth on the face, chest, and back in women
- Menstrual irregularities
- Weakness and loss of muscle mass in the legs
- Easy bruising
• Depression and/or moodiness
• Weakened bones (osteoporosis), which can lead to fractures
• High blood sugar levels, often leading to diabetes
• High blood pressure

Cushing syndrome may be caused by an adrenal cancer or an adrenal adenoma that makes high levels of cortisol and/or related hormones, but it can also have other causes. For example, benign pituitary gland tumors can make high levels of another hormone called adrenocorticotropic hormone (ACTH). This is often called Cushing disease. The high levels of ACTH in turn cause normal adrenal gland tissue to make more cortisol. This results in the same symptoms as Cushing syndrome. Very rarely, other tumors can make ACTH and cause the same symptoms.

Some people with immune system problems or some cancers, such as lymphomas, are treated with drugs chemically related to cortisol.

Because there are so many causes of high cortisol levels that can lead to Cushing syndrome, doctors do a number of tests to find out whether the patient has an adrenal cortical tumor or some other cause of Cushing syndrome.

**Symptoms caused by aldosterone production**

The main signs and symptoms caused by aldosterone-producing adrenal tumors are:

• High blood pressure
• Weakness
• Muscle cramps
• Low blood potassium levels

Adrenal adenomas often make aldosterone, but adrenal cancers rarely do.

**Symptoms caused by a large adrenal cancer pressing on nearby organs**

As an adrenal cancer grows, it presses on nearby organs and tissues. This may cause pain near the tumor, a feeling of fullness in the abdomen, or trouble eating because of a feeling of filling up easily.

• References
Lirov R, Tobias E, Lerario AM, Hammer GD. Adrenal tumors In: DeVita VT, Lawrence
Tests for Adrenal Cancer

Medical history and physical exam

If you have signs or symptoms that suggest adrenal cancer, the first step is usually for the doctor to take your complete medical history to find out more about them.

- Your doctor will want to know if anyone in your family has had adrenal cancer or any other type of cancer.
- Your doctor might also ask about your menstrual or sexual function and about any other symptoms you may be having.

A physical exam will give other information about possible signs of adrenal cancer or other health problems.

- Your doctor will thoroughly examine your abdomen for evidence of a tumor (or mass).
- Your blood and urine will likely be tested to look for high levels of the hormones made by some adrenal tumors.
- If an adrenal tumor is suspected, imaging tests will be done to look for it. These tests can also help see if it has spread.

If a mass is seen on an imaging test and it is likely to be an adrenal cancer, doctors will recommend surgery to remove the cancer. Generally, doctors do not recommend a biopsy (removing a sample of the tumor to look at under the microscope to see if it is
cancer) before surgery to remove the tumor. This is because doing a biopsy can increase the risk that an adrenal cancer will spread outside of the adrenal gland.

**Imaging tests**

**Chest x-ray**

A chest x-ray can show if the cancer has spread to the lungs. It may also be useful to determine if there are any serious lung or heart diseases.

**Ultrasound**

Ultrasound tests use sound waves to make pictures of parts of the body. A device called a transducer makes the sound waves, which are reflected off of tissues and organs in the body. The pattern of sound wave echoes is detected by the transducer and analyzed by a computer to create an image of these tissues and organs. This test can show if there is a tumor in the adrenal gland. It can also show tumors in the liver if the cancer has spread there. In general, ultrasound is not used to look for adrenal tumors unless a CT scan can't be done for some reason.

**Computed tomography (CT)**

CT scans show the adrenal glands fairly clearly and often can confirm the location of the cancer. It can also help show if the cancer has spread into your liver or other nearby organs. CT scans can also show lymph nodes and distant organs where metastatic cancer might be present. The CT scan can help determine if surgery is a good treatment option.

**Magnetic resonance imaging (MRI)**

Like CT scans, MRI scans show detailed images of soft tissues in the body. But MRI scans use radio waves and strong magnets instead of x-rays. MRI may sometimes provide more information than CT scans because it can better distinguish adrenal cancers from benign tumors.

MRI scans are particularly helpful in examining the brain and spinal cord. In people with suspected adrenal tumors, an MRI of the brain may be done to examine the pituitary gland. Tumors of the pituitary gland, which lies underneath the front of the brain, can cause symptoms and signs similar to adrenal tumor.
**Positron emission tomography (PET)**

For a [PET](#) scan, you are injected with a slightly radioactive form of sugar, which collects mainly in cancer cells. A special camera then creates a picture of areas of radioactivity in the body. The picture is not detailed like a CT or MRI scan, but a PET scan can look for possible areas of cancer spread in all areas of the body at once.

Some machines do both a PET and CT scan at the same time (PET/CT scan). This lets the doctor see areas that "light up" on the PET scan in more detail.

PET scans can be helpful in deciding if an adrenal tumor is likely to be benign or malignant (cancer), and if it may have spread.

**Other tests**

**Laparoscopy**

A laparoscope, a thin, flexible tube with a tiny video camera on the end, is inserted through a small surgical opening in the patient's side to allow the surgeon to see where the cancer is growing. It can be used to help spot distant spread as well as enlarged lymph nodes (which might contain cancer). Sometimes it is combined with ultrasound to give a better picture of the cancer. Laparoscopy may be done to help predict whether it will be possible to completely remove the cancer by surgery. In addition to viewing adrenal tumors through the laparoscope, surgeons can sometimes remove small benign adrenal tumors through this instrument. This method is described in [Surgery for Adrenal Cancer](#).

**Biopsy**

Imaging tests may find tumors, but often the only way to know for sure that a tumor is cancer is to remove a sample of tumor tissue to look at under the microscope. This is called a [biopsy](#).

Since adrenal adenomas (benign tumors) and cancers can look alike under the microscope, a biopsy may not be able to tell whether or not an adrenal tumor is cancerous. A needle biopsy of an adrenal cancer also can actually spread tumor cells. For these reasons, a biopsy is generally not done before surgery if an adrenal tumor's size and certain features seen on imaging tests suggest it is most likely cancer. Blood tests of hormone levels and imaging tests are more useful than biopsies in diagnosing adrenal cancer.
If the cancer appears to have metastasized (spread) to another part of the body such as the liver, then a needle biopsy of the metastasis may be done. If a patient is known to have an adrenal tumor and a liver biopsy shows adrenal cells are present in the liver, then the tumor is cancer.

In general, a biopsy is only done in a patient with adrenal cancer when there are tumors outside the adrenals and the doctor needs to know if these tumors are from the adrenal cancer or are caused by some other cancer or disease. Tumors in the adrenal glands are sometimes biopsied when the patient is known to have a different type of cancer (like lung cancer), and knowing if it has spread to the adrenal glands would alter treatment.

**Blood and urine tests for adrenal hormones**

Blood and urine tests to measure levels of adrenal hormones are important in deciding whether a patient with signs and symptoms of adrenal cancer has the disease. For urine tests, you may be asked to collect all of your urine for 24 hours. Blood and urine tests are as important as imaging tests in diagnosing adrenal cancer. Doctors might choose which tests to do based on the patient's symptoms. But often doctors will check hormone levels even when symptoms of high hormone levels are not present. This is because symptoms of abnormal hormone levels can be very subtle, and blood tests might be able to detect changes in hormone levels even before symptoms occur.

**Tests for high cortisol levels**

The levels of cortisol are measured in the blood and in the urine. If an adrenal tumor is making cortisol, these levels will be abnormally high. These tests may be done after giving the patient a dose of dexamethasone. Dexamethasone is a drug that acts like cortisol. If given to someone who does not have an adrenal tumor, it will lower levels of cortisol and similar hormones. In someone with an adrenal cortex tumor, these hormone levels will remain high after they receive dexamethasone. Blood levels of another hormone called ACTH will also be measured to help distinguish adrenal tumors from other diseases that can cause high cortisol levels.

**Tests for high aldosterone levels**

The level of aldosterone will be measured and will be high if the tumor is making aldosterone. High aldosterone can also lead to low blood levels of potassium and renin (a hormone made by the kidneys).
Tests for high androgen or estrogen levels

Patients with androgen-producing tumors will have high levels of dehydroepiandrosterone sulfate (DHEAS) or testosterone. Patients with estrogen-producing tumors will have high levels of estrogen in their blood.

- **References**
  


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Adrenal Cancer Stages

After someone is diagnosed with adrenal cancer, doctors will try to figure out if it has spread, and if so, how far. This process is called staging. The stage of a cancer describes how far the cancer has spread in the body. It helps determine how serious the cancer is and how best to treat it. The stage is one of the most important factors in deciding how to treat the cancer and determining how successful treatment might be.

To determine the cancer's stage after an adrenal cancer diagnosis, doctors try to answer these questions:

- How large is the cancer?
- Has the cancer grown into nearby structures or organs?
- Has the cancer spread to nearby lymph nodes or to distant organs?

The stage of adrenal cancer is based on the results of physical exams, biopsies, and imaging tests (CT or MRI scan, x-rays, PET scan, etc.), which are described in Tests for Adrenal Cancer, as well as the results of surgery.

The adrenal cancer stages range from stages I (1) through IV (4). As a rule, the lower the number, the less the cancer has spread. A higher number, such as stage IV, means a more advanced cancer. Cancers with similar stages tend to have a similar outlook and are often treated in much the same way.

Understanding your adrenal cancer stage

A staging system is a standard way for the cancer care team to describe how far a cancer has spread. Two major staging systems used for adrenal cancer are the American Joint Committee on Cancer (AJCC) TNM staging system and the ENSAT (European Network for the Study of Adrenal Tumors) staging system. Both are based on the same TNM categories, which are based on 3 key pieces of information:

- **T** describes the size of the main (primary) tumor and whether it has grown into nearby areas.
- **N** indicates any cancer spread to lymph nodes near the adrenal gland (regional lymph nodes). Lymph nodes are small bean-sized collections of immune system cells, to which cancers often spread first.
- **M** indicates if the cancer has spread (metastasized) to distant sites, such as other
organs or lymph nodes that are not near the adrenal gland (*distant lymph nodes*). Numbers or letters after T, N, and M provide more details about each of these factors. Higher numbers mean the cancer is more advanced. Once a person’s T, N, and M categories have been determined, usually after surgery, this information is combined in a process called stage grouping to assign an overall stage (numbered I through IV).

The staging system in the table below uses the *pathologic stage*. It is based on the results of physical exam, biopsy, imaging tests, and the results of surgery. This is likely to be more accurate than *clinical staging*, which only takes into account the tests done before surgery.

Adrenal cancer staging can be complex. If you have any questions about your stage, please ask your doctor to explain it to you in a way you understand.

<table>
<thead>
<tr>
<th>ENSA T stage</th>
<th>AJCC Stage</th>
<th>Stage grouping</th>
<th>Stage description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>I</td>
<td>T1 N0 M0</td>
<td>The tumor is 5 cm (about 2 inches) or less in size and it has not grown into tissues outside the adrenal gland (T1). It has not spread to nearby lymph nodes (N0) or distant sites (M0).</td>
</tr>
<tr>
<td>II</td>
<td>II</td>
<td>T2 N0 M0</td>
<td>The tumor is greater than 5 cm (2 inches) in size and it has not grown into tissues outside the adrenal gland (T2). It has not spread to nearby lymph nodes (N0) or distant sites (M0).</td>
</tr>
<tr>
<td>III</td>
<td>III</td>
<td>T1 N1 M0</td>
<td>The tumor is 5 cm (about 2 inches) or less in size and it has not grown into tissues outside the adrenal gland (T1). The cancer has spread to nearby lymph nodes (N1) but not to distant sites (M0).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T2 N1 M0</td>
<td>The tumor is greater than 5 cm (2 inches) in size and it has not grown into tissues outside the adrenal gland (T2). The cancer has spread to nearby lymph nodes (N1) but not to distant sites (M0).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Any N M0</td>
<td>The tumor is growing in the fat that surrounds the adrenal gland. The tumor can be any size (T3). It might or might not have spread to nearby lymph nodes (Any N0). It has not spread to distant sites (M0).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T4 Any N</td>
<td>The tumor is growing into nearby organs, such as the kidney, pancreas, spleen, and liver or large blood vessels</td>
</tr>
</tbody>
</table>
The tumor can be any size (T4).
It may or may not have spread to nearby lymph nodes (Any N).
It has not spread to distant organs (M0).

<table>
<thead>
<tr>
<th>IV</th>
<th>IV</th>
<th>Any T</th>
<th>Any N</th>
<th>M1</th>
</tr>
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<tbody>
<tr>
<td>IV</td>
<td>IV</td>
<td>Any T</td>
<td>Any N</td>
<td>M1</td>
</tr>
</tbody>
</table>

The cancer has spread to distant sites like the liver or lungs (M1). It can be any size (Any T) and may or may not have spread to nearby tissues (Any T) or lymph nodes (Any N).

The following additional categories are not listed on the table above:

- **TX**: Main tumor cannot be assessed due to lack of information
- **T0**: No evidence of a primary tumor
- **NX**: Regional lymph nodes cannot be assessed due to lack of information

**References**


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**Survival Rates for Adrenal Cancer**

Survival rates tell you what portion of people with the same type and stage of cancer are still alive a certain length of time (usually 5 years) after they were diagnosed. These numbers can't tell you how long you will live, but they might help give you a better understanding about how likely it is that your treatment will be successful.

**What is a 5-year survival rate?**

Statistics on the outlook for people with a certain type and stage of cancer are often given as 5-year survival rates, but many people live longer – often much longer – than 5 years. The 5-year survival rate is the percentage of people who live at least 5 years
after being diagnosed with cancer. For example, a 5-year survival rate of 90% means that an estimated 90 out of 100 people who have that cancer are still alive 5 years after being diagnosed.

Relative survival rates are often a more accurate way to estimate the effect of cancer on survival. These rates compare people with adrenal cancer to people in the overall population. For example, if the 5-year relative survival rate for a specific type and stage of cancer is 90%, it means that people who have that cancer are, on average, about 90% as likely as people who don’t have that cancer to live for at least 5 years after being diagnosed.

But remember, the 5-year relative survival rates are estimates – your outlook can vary based on a number of factors specific to you.

Cancer survival rates don’t tell the whole story

Survival rates are often based on previous outcomes of large numbers of people who had the disease, but they can’t predict what will happen in any particular person’s case. There are a number of limitations to remember:

- The numbers below are among the most current available. But to get 5-year survival rates, doctors have to look at people who were treated at least 5 years ago. As treatments are improving over time, people who are now being diagnosed with adrenal cancer may have a better outlook than these statistics show.
- These statistics are based on the stage of the cancer when it was first diagnosed. They do not apply to cancers that come back later or spread, for example.
- Besides the cancer stage, many other factors can affect a person’s outlook, such as age and overall health, and how well the cancer responds to treatment.

Your doctor can tell you how these numbers may apply to you, as he or she is familiar with your situation.

Survival rates for adrenal cancer

These survival rates come from the National Cancer Database (NCDB). The database does not list survival statistics by AJCC or ENSAT stages. Instead, it divides patients into 3 groups:

- **Localized** means that the cancer hasn’t grown outside of the adrenal gland at diagnosis (like stages I and II).
• **Regional** means that the cancer has grown into nearby tissues or has spread to nearby lymph nodes (like stage III).
• **Distant** means that the cancer has spread further to distant sites (like stage IV).

The 5-year relative survival rates by stage for adrenal cancer are as follows:

<table>
<thead>
<tr>
<th>Stage</th>
<th>5-year Relative Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>Localized</td>
<td>65%</td>
</tr>
<tr>
<td>Regional</td>
<td>44%</td>
</tr>
<tr>
<td>Distant</td>
<td>7%</td>
</tr>
</tbody>
</table>

**References**


Questions to Ask About Adrenal Cancer

As you deal with adrenal cancer and the process of treatment, you should be able to have frank, open discussions with your cancer care team. Ask any questions, no matter how trivial they might seem. Among the questions you might want to ask are:

- Do I have a benign or malignant (cancerous) adrenal gland tumor?
- Will I need more tests?
- Will I need to see any other types of doctors?
• Has my cancer spread beyond the adrenal gland?
• Is my tumor secreting excessive amounts of hormones?
• How will we treat the hormone excess?
• Are the changes to my body permanent?
• How will we treat the changes to my body?
• Is this form of adrenal gland cancer hereditary?
• What are my treatment choices?
• What side effects can I expect from my treatments?
• What are the other risks of treatment?
• How soon do we need to start treatment?
• What will treatment be like?
• Where will treatment be done?
• How long will it take to recover from treatment?
• When can I go back to work after treatment?
• What are the chances that the cancer will come back?
• What should I do to be ready for treatment?
• Do I need a second opinion?
• Based on what you’ve learned about my cancer, will it shorten my life?

You will no doubt have other questions about your personal situation. Be sure and write your questions down so you remember to ask them during each visit with your cancer care team. Keep in mind, too, that doctors aren't the only ones who can give you information. Other health care professionals, such as nurses and social workers, may have the answers you seek. You can find more information about communicating with your health care team in The Doctor-Patient Relationship.

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Treating Adrenal Cancer

General treatment information

If you’ve been diagnosed with adrenal cancer, your care team will discuss treatment with you. It's important to take time and think about your options. It's important to weigh the benefits of each option against the possible risks and side effects, and an experienced care team can help.

The main types of treatment for adrenal cancer are:

- Surgery
- Radiation
- Chemotherapy
- Other drugs

Which doctors treat adrenal cancer?

Depending on the type and stage of your cancer, you might need more than one type of treatment. You also might need to see more than one doctor. Doctors on your cancer treatment team might include:

- A surgical oncologist: a doctor who uses surgery to treat cancer
- An endocrinologist: a doctor who treats diseases in glands that secrete hormones
- A radiation oncologist: a doctor who uses radiation to treat cancer
- A medical oncologist: a doctor who uses chemotherapy and other medicines to treat cancer

You might have many other specialists on your treatment team as well, including physician assistants (PAs), nurse practitioners (NPs), nurses, psychologists, social workers, rehabilitation specialists, and other health professionals. See Health Professionals Associated With Cancer Care for more on this.
Making treatment decisions

It's important to discuss all of your treatment options, including their goals and possible side effects, with your doctors to help make the decision that best fits your needs. Some important things to consider include:

- Your age and expected life span
- Any other serious health conditions you have
- The location and stage of your tumor
- The likelihood that treatment will cure your tumor (or help in some other way)
- Your feelings about the possible side effects from treatment

You may feel that you need to decide quickly, but it's important to give yourself time to absorb the information you have learned. It's also very important to ask questions if you're not sure about something. You can find some good questions to ask in Questions to Ask About Adrenal Cancer.

Getting a second opinion

If you have time, it is often a good idea to get a second opinion. This can give you more information and help you feel more confident about the treatment plan that is chosen. Another reason for people with adrenal cortical cancer to get a second opinion is that, because these cancers are so rare, only large cancer centers will have much experience in treating them. If you're not sure where to go for a second opinion, ask your doctor for help.

Thinking about taking part in a clinical trial

Clinical trials are carefully controlled research studies that are done to get a closer look at promising new treatments or procedures. Clinical trials are one way to get state-of-the-art cancer treatment. Sometimes, they may be the only way to get access to newer treatments. They are also the best way for doctors to learn better methods to treat cancer. Still, they are not right for everyone.

If you would like to learn more about clinical trials that might be right for you, start by asking your doctor if your clinic or hospital conducts clinical trials. See Clinical Trials to learn more.

Considering complementary and alternative methods
You may hear about alternative or complementary methods that your doctor hasn’t mentioned to treat your cancer or relieve symptoms. These methods can include vitamins, herbs, and special diets, or other methods such as acupuncture or massage, to name a few.

**Complementary methods** refer to treatments that are used along with your regular medical care. **Alternative treatments** are used instead of a doctor’s medical treatment. Although some of these methods might be helpful in relieving symptoms or helping you feel better, many have not been proven to work. Some might even be dangerous.

Be sure to talk to your cancer care team about any method you are thinking about using. They can help you learn what is known (or not known) about the method, which can help you make an informed decision. See [Complementary and Alternative Medicine](#) to learn more.

**Help getting through treatment**

Your cancer care team will be your first source of information and support, but there are other resources for help when you need it. Hospital- or clinic-based support services are an important part of your care. These might include nursing or social work services, financial aid, nutritional advice, rehab, or spiritual help.

The American Cancer Society also has programs and services to help you get through treatment. Call our National Cancer Information Center at 1-800-227-2345 and speak with one of our trained specialists.

**Choosing to stop treatment or choosing no treatment at all**

For some people, when treatments have been tried and are no longer controlling the cancer, it could be time to weigh the benefits and risks of continuing to try new treatments. Whether or not you continue treatment, there are still things you can do to help maintain or improve your quality of life.

Some people, especially if the cancer is advanced, might not want to be treated at all. There are many reasons you might decide not to get cancer treatment, but it’s important to talk this through with your doctors before you make this decision. Remember that even if you choose not to treat the cancer, you can still get supportive care to help with pain or other symptoms.
Surgery for Adrenal Cancer

The main treatment for adrenal cancer is removal of the adrenal gland, an operation called an **adrenalectomy**. The surgeon will try to remove as much of the cancer as possible, including any areas of cancer spread. If nearby lymph nodes are enlarged, they also will need to be removed and checked for cancer spread.

One way to remove the adrenal gland is through an incision in the back, just below the ribs. This works well for small tumors, but it can be hard to see larger tumors well.

More often, the surgeon makes the incision through the front of the abdomen. This lets the surgeon see the tumor more clearly and makes it easier to see if it has spread. It also gives the surgeon room to remove a large cancer that has grown into tissues and organs near the adrenal gland. For example, if the cancer has grown into the kidney, all or part of the kidney must also be removed. If it has grown into the muscle and fat around the adrenal gland, these tissues will need to be removed as well.

Sometimes, the cancer can grow into the inferior vena cava, the large vein that carries blood from the lower body to the heart. If this is the case, it requires a very extensive operation to remove the tumor completely and preserve the vein. To remove the tumor from the vein, the surgeon may need to bypass the body’s circulation by putting the patient on a heart-lung bypass pump like that used in heart surgery. If the cancer has grown into the liver, the part of the liver containing the cancer might need to be removed, too.

It is also possible to remove some small adrenal tumors through a thin hollow, lighted tube (with a tiny video camera on the end) called a **laparoscope**. Instead of a large
incision in the skin to remove the tumor, several small ones are made. The surgeon inserts the laparoscope through one of them. This lets him or her see inside the belly. Then, other instruments inserted through this tube or through other small incisions are used to remove the adrenal gland. The main advantage of this method is that because the incisions are smaller, patients recover from surgery more quickly.

Although laparoscopic surgery is used to treat adrenal adenomas (benign tumors), it often is not an option for treating larger adrenal cancers. This is because it's important to remove the tumor in one piece whenever possible. To remove a large tumor with a laparoscope, the surgeon might have to break it up into small pieces first. Doing that raises the risk of the cancer spreading. Adrenal cancers that have grown into nearby tissues or lymph nodes can also be hard to remove completely using laparoscopy.

For more about surgery to treat cancer, see Cancer Surgery.

- References


Radiation Therapy for Adrenal Cancer

Radiation therapy uses high-energy x-rays (or particles) to kill cancer cells. Radiation therapy is not used often as the main initial treatment for adrenal cancer because the cancer cells are not easy to kill with x-rays. Radiation may be used after surgery to help keep the tumor from coming back. This is called adjuvant therapy. Radiation can also be used to treat areas of cancer spread, such as in the bones or brain.

Types of radiation therapy

External beam radiation therapy focuses radiation on the cancer from a machine outside the body. Treatments are often given once or twice a day, 5 days a week for several weeks. Treatment is similar to getting an x-ray test, and is not painful. The actual treatment time lasts only a few minutes, although the setup time - getting you into place for treatment - usually takes longer so that the radiation is aimed accurately at the cancer. Before the treatment starts, the radiation team will take careful measurements to find the correct angles for aiming the radiation beams and the proper dose of radiation. This planning session, called simulation, usually includes getting imaging tests such as CT or MRI scans.

Brachytherapy (internal radiation therapy) uses small pellets of radioactive material
placed next to or directly into the cancer, sometimes in thin plastic tubes. The tubes containing the pellets are left in place for a few days and then removed. The actual time is determined by the strength of the radioactive pellets and the size of the tumor. This type of radiation is not often used to treat adrenal cortical cancer.

**Possible side effects**

Common side effects of radiation therapy include:

- Nausea and vomiting
- Diarrhea (if an area of the abdomen is treated)
- Skin changes in the area being treated, which can range from redness to blistering and peeling
- Hair loss in the area being treated
- Fatigue
- Low blood counts

More information can be found in [Radiation Therapy](#).

**References**


Chemotherapy for Adrenal Cancer

Chemotherapy (chemo) is the use of certain types of drugs to treat cancer. Typically, the drugs are given into a vein or by mouth (in pill form). These drugs enter the bloodstream and reach throughout the body, making this treatment useful for cancer that has spread (metastasized) to organs beyond the adrenal gland. Chemo does not work very well for adrenal cancer, so it is most often used for adrenal cancer that has become too widespread to be removed with surgery (although it is very unlikely to cure the cancer).

Mitotane

Mitotane is the drug most often used for people with adrenal cancer. It blocks hormone production by the adrenal gland and also destroys both adrenal cancer cells and healthy adrenal tissue. This drug can also suppress the usual adrenal steroid hormone
production from your other, normal adrenal gland. This can lead to low levels of cortisol and other hormones, which can make you feel weak and sick. If this occurs, you'll need to take steroid hormone pills to bring your hormone levels up to normal. Mitotane can also alter levels of other hormones, such as thyroid hormone or testosterone. If that occurs, you'd need drugs to replace these hormones as well.

Sometimes mitotane is given for a period of time after surgery has removed all the (visible) cancer. This is called adjuvant therapy and is meant to kill any cells that were left behind but were too small to see. Giving the drug this way may prevent or delay the cancer’s return.

If the cancer has not been completely removed by surgery or has come back, mitotane will shrink the cancer in some patients. On average, the response lasts about a year, but it can be longer for some patients.

Mitotane is particularly helpful for people with adrenal cancers who have problems caused by excessive hormone production. Even when it doesn't shrink the tumor, mitotane can reduce abnormal hormone production and relieve symptoms. Most patients with excess hormone production are helped by mitotane.

This drug can cause major side effects. The most common are nausea, vomiting, diarrhea, rashes, confusion, and sleepiness. Sometimes lower doses of the drug can still be effective and cause fewer side effects.

This drug is taken as a pill 3 to 4 times a day. Like other types of chemo, treatment with mitotane needs to be supervised closely by a doctor.

**Other chemo drugs used for adrenal cancer**

Drugs are sometimes combined with mitotane to treat advanced adrenal cancer. The drugs used most often are:

- The combination of cisplatin, doxorubicin (Adriamycin), and etoposide (VP-16) plus mitotane
- Streptozocin plus mitotane

Chemo drugs used less often, include:

- Paclitaxel (Taxol)
- 5-fluorouracil (5-FU)
- Vincristine (Oncovin)
These drugs may be given in different combinations and are often given with mitotane.

**Chemo drug side effects**

Chemotherapy drugs kill cancer cells but also damage some normal cells, which can cause some side effects. Side effects from chemo depend on the type of drugs, their doses, and how long treatment lasts. Common side effects of chemo include:

- Nausea and vomiting
- Loss of appetite
- Loss of hair
- Hand and foot rashes
- Mouth sores
- Diarrhea
- Increased risk of infection (due to a shortage of white blood cells)
- Problems with bleeding or bruising after minor cuts or injuries (due to a shortage of blood platelets)
- Anemia, fatigue, or shortness or breath (due to low red blood cell counts)

Along with the risks above, some chemo drugs can cause other side effects.

Ask your health care team what side effects you can expect based on the specific drugs you will get. Be sure to tell your doctor or nurse if you do have side effects, as there are often ways to help with them. For example, drugs can be given to help prevent or reduce nausea and vomiting.

More information about chemotherapy can be found in [Chemotherapy](#).

- **References**


  Fassnacht M, Terzolo M, Allolio B, et al. Combination chemotherapy in


Other Drugs Used to Treat Adrenal Cancer

Drugs other than mitotane may be used to block hormones made by the cancer or to lower the effects of the hormones. Treatment with some of these drugs may need to be supervised by an endocrinologist (hormone doctor) because they affect several hormone systems and might make it necessary to replace other hormones.

**Ketoconazole** and **metyrapone** can reduce adrenal steroid hormone production. This can help relieve symptoms caused by these hormones, but it doesn't shrink the cancer.

Some drugs block the effects of the hormones made by the tumor. These include:

- **Spironolactone (Aldactone)**, which decreases effects of aldosterone
- **Mifepristone (Korlym)**, which decreases cortisol effects
- **Tamoxifen, toremifene (Fareston), and fulvestrant (Faslodex)**, can block the effects of estrogen. These drugs are more often used to treat breast cancer, but can be useful in some patients (often men) who have adrenal tumors that make estrogen.

**References**


characteristics associated with survival of adult patients with adrenocortical carcinoma. *J Clin Endocrinol Metab.* 2013 Dec 3. [Epub ahead of print].


Treatment Choices by Stage of Adrenal Cancer

Treatment of adrenal cancer depends to a large degree on where the cancer started and how far it has spread.

Stages I and II

Surgery is the main treatment for stage I and stage II adrenal cancer. The entire adrenal gland will be removed. Since a person has 2 adrenal glands, removal of the diseased one does not generally cause problems for the patient. If nearby lymph nodes are enlarged, they will be removed as well and checked to see if they contain cancer cells. Most surgeons do not remove these lymph nodes if they're not enlarged.

In many cases, no further treatment is necessary. If the tumor was not removed completely, treatment with radiation and/or mitotane may be given after surgery to help keep the cancer from coming back.

These treatments may also be given if the tumor has a higher chance of coming back later because it was large or appears to be growing quickly (when looked at with a microscope). When treatment is given after surgery has removed all visible cancer, it is called adjuvant therapy. The goal of adjuvant therapy is to kill any cancer cells that may have been left behind but are too small to be seen. Killing these cells lowers the chance of the cancer coming back later.

Stage III

Surgery is the main treatment for stage III adrenal cancer. The goal of surgery is to remove all of the cancer. The adrenal gland with the tumor is always removed, and the surgeon might also need to remove some tissue around the adrenal gland, including
part (or all) of the nearby kidney and part of the liver. The lymph nodes near the adrenal gland will also be removed. After surgery, adjuvant treatment with radiation and/or mitotane may be given to help keep the cancer from coming back.

**Stage IV**

If it is possible to remove all of the cancer, then surgery may be done. When the cancer has spread to other parts of the body, it usually cannot be cured with surgery. Some doctors may still recommend surgery to remove as much of the tumor as possible. This type of surgery is called debulking. Removing most of the cancer may help reduce symptoms by lowering the production of hormones. Radiation therapy may also be used to treat any areas of cancer that are causing symptoms. For example, radiation can help when cancer that has spread to the bones is causing pain. Mitotane therapy is also an option. Treatment may begin right away, or it may be postponed until the cancer is causing symptoms. Other chemotherapy (chemo) drugs may also be used.

**Recurrent adrenal 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 (in other organs such as the lungs or bones). Local recurrence may be treated with surgery to remove the cancer. This is more likely to be done if all of the cancer can be removed. Distant recurrence is treated like stage IV disease. Debulking (removing as much of the cancer as possible) surgery may be done to relieve symptoms. People with recurrent disease are often treated with mitotane and/or other chemo drugs. They may also receive radiation therapy. If the mitotane doesn't work or cannot be tolerated, other drugs can be given to lower hormone production. For more information on recurrence, see Understanding Recurrence.

Most of the time, these treatments provide only temporary help because the tumor will eventually continue to grow. When this happens and these treatments are no longer helping, treatment aimed at providing as good a quality of life as possible may be the best choice. The best medicines to treat pain are morphine and other opioids. Many studies have shown that taking morphine as directed for pain does not mean a person will become addicted.

There are many other ways your doctor can help maintain your quality of life and control your symptoms. This means that you must tell your doctor how you are feeling and what symptoms you are having. Many patients don't like to disappoint their doctors by telling them they are not feeling well. This does no one any good.
• **References**


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After Adrenal Cancer Treatment

Living as a Cancer Survivor

For many people, cancer treatment often raises questions about next steps as a survivor.

- Living as an Adrenal Cancer Survivor

Cancer Concerns After Treatment

Treatment may remove or destroy the cancer, but it is very common to have questions about cancer coming back or treatment no longer working.

- Second Cancers After Adrenal Cancer

Living as an Adrenal Cancer Survivor

For some people with adrenal cancer, treatment can remove or destroy the cancer. The end of treatment can be both stressful and exciting. You may be relieved to finish treatment, but it’s hard not to worry about cancer coming back. This is very common if you’ve had cancer.

For other people, the cancer might never go away completely. Some people may get chemotherapy or other treatments to try and help keep the cancer in check. Learning to live with cancer that does not go away can be difficult and very stressful.

Life after adrenal cancer means returning to some familiar things and making some new choices.

Follow-up care
Follow-up care will be very important after treatment for adrenal cancer. One reason for this is that the cancer can come back (recur), even after treatment for early-stage disease. Your doctor will want to see you frequently in the first months and years after treatment, but this might become less often as time goes on. This is a good time for you to talk to your cancer care team about any changes or problems you notice and any questions or concerns you have.

If you are still taking mitotane, your follow-up appointments may need to be more frequent to see if the mitotane levels in your blood are in a good range and if there are any side effects from this drug. Remember that mitotane will also suppress the usual adrenal steroid hormone production from your other, normal adrenal gland. As a result, you will need to take hormone replacement tablets to protect you against cortisol deficiency.

CT scans may be done periodically to see if the cancer has returned or is continuing to grow. Periodic tests of your blood and urine hormone levels will be done to evaluate the success of drugs in suppressing hormone production by the cancer.

**Ask your doctor for a survivorship care plan**

Talk with your doctor about developing a [survivorship care plan](#) for you. This plan might include:

- A suggested schedule for follow-up exams and tests
- A schedule for other tests you might need in the future, such as [early detection](#) (screening) tests for other types of cancer, or tests to look for long-term health effects from your cancer or its treatment
- A list of possible late- or long-term side effects from your treatment, including what to watch for and when you should contact your doctor
- [Diet and physical activity](#) suggestions
- Reminders to keep your appointments with your primary care provider (PCP), who will monitor your general health care

**Nutrition**

Eating right can be hard for anyone, and may have gotten tougher during cancer treatment. The cancer, varying hormone levels, and your treatment can all affect how you eat and absorb nutrition. [Nausea](#) can be a problem during and after some treatments, and you may have lost your appetite and some weight.
If you have lost or are losing weight, or if you are having trouble eating, do the best you can. Eat what appeals to you. Eat what you can, when you can. You might find it helps to eat small portions every 2 to 3 hours until you feel better. Now is not the time to restrict your diet. Try to keep in mind that these problems usually improve over time. Your cancer team may refer you to a dietitian, an expert in nutrition who can give you ideas on how to fight some of the side effects of your treatment.

**Keeping health insurance and copies of your medical records**

Even after treatment, it’s very 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.

At some point after your cancer treatment, you might find yourself seeing a new doctor who doesn’t know about your medical history. It’s important to keep copies of your medical records to give your new doctor the details of your diagnosis and treatment. Learn more in [Keeping Copies of Important Medical Records](#).

**Can I lower my risk of adrenal cancer progressing or coming back?**

If you have (or have had) adrenal cancer, you probably want to know if there are things you can do that might lower your risk of the cancer growing or coming back, such as exercising, eating a certain type of diet, or taking nutritional supplements. Unfortunately, since there are no known preventable risk factors for this cancer, it is not yet clear if there are things you can do that will keep it from coming back.

Tobacco use has been suggested as a risk factor for adrenal cancer by some researchers, so not smoking might help reduce your risk. We don’t know for certain if this will help, but we do know that it can help improve your appetite and overall health. It can also reduce the chance of developing other types of cancer. If you want to quit smoking and need help, call the American Cancer Society at 1-800-227-2345. You can also learn more in our [Guide to Quitting Smoking](#).

**About dietary supplements**

So far, no [dietary supplements](#) (including vitamins, minerals, and herbal products) have
been shown to clearly help lower the risk of cancer progressing or coming back. This doesn’t mean that no supplements will help, but it’s important to know that none have been proven to do so.

Dietary supplements are not regulated like medicines in the United States – they do not have to be proven effective (or even safe) before being sold, although there are limits on what they’re allowed to claim they can do. If you’re thinking about taking any type of nutritional supplement, talk to your health care team. They can help you decide which ones you can use safely while avoiding those that might be harmful.

**If the cancer comes back**

If the cancer does recur at some point, your treatment options will depend on where the cancer is located, what treatments you’ve had before, and your health. For more information on how recurrent cancer is treated, see [Treatment Choices by Type and Stage of Adrenal Cancer](#).

For more general information on recurrence, you may also want to see [Understanding Recurrence](#).

**Could I get a second cancer after treatment?**

People who’ve had adrenal cancer can still get other cancers. In fact, adrenal cancer survivors are at higher risk for getting some other types of cancer. Learn more in [Second Cancers After Adrenal Cancer](#).

- **References**

Second Cancers After Adrenal Cancer

Cancer survivors can be affected by a number of health problems, but often their greatest concern is facing cancer again. If a cancer comes back after treatment it is called a recurrence. But some cancer survivors may develop a new, unrelated cancer later. This is called a second cancer. No matter what type of cancer you have had, it is still possible to get another (new) cancer, even after surviving the first.

Unfortunately, being treated for cancer doesn't mean you can't get another cancer. People who have had cancer can still get the same types of cancers that other people get. In fact, certain types of cancer and cancer treatments can be linked to a higher risk of certain second cancers.

Survivors of adrenal cancer can still get any type of second cancer, but they have increased risks of:

- Lung cancer
- Bladder cancer
- Prostate cancer

Women who have had adrenal cancer also have an increased risk of melanoma of the skin.

Patients who were under 45 when adrenal cancer was diagnosed have increased risks of breast cancer, bone and soft tissue sarcoma, brain tumors, and acute leukemia. These cancers, along with adrenal cancer, are seen in a family cancer syndrome called Li-Fraumeni syndrome.

Follow-up after treatment

After completing treatment for adrenal cancer, you should still see your doctor regularly and may have tests to look for signs the cancer has come back or spread. Experts do not recommend any additional testing to look for second cancers in patients without
symptoms. Let your doctor know about any new symptoms or problems, because they could be caused by the cancer coming back or by a new disease or second cancer.

Survivors of adrenal cancer should follow the American Cancer Society guidelines for the early detection of cancer and stay away from tobacco products. Smoking increases the risk of many cancers.

To help maintain good health, survivors should also:

- Get to and stay at a healthy weight
- Adopt a physically active lifestyle
- Eat a healthy diet, with an emphasis on plant foods
- Limit alcohol to no more than 1 drink per day for women or 2 per day for men

These steps may also lower the risk of some cancers.

See Second Cancers in Adults for more information about causes of second cancers.

- References


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