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Adrenal Cancer Early Detection, Diagnosis, and Staging

Know the signs and symptoms of adrenal cancer. Find out how adrenal cancer is tested for, diagnosed, and staged.

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 early puberty 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](#)¹ of the abdomen is done for some other health concern. If an adrenal tumor is found incidentally, it is important to run tests to rule out adrenocortical cancer.

The American Cancer Society has official [recommendations for the early detection of several types of cancer](#)². But because adrenal cancers occur so rarely, the Society does not recommend routine testing for this cancer in people without any symptoms.

Hyperlinks

1. www.cancer.org/cancer/diagnosis-staging/tests/imaging-tests/ct-scan-for-cancer.html
2. www.cancer.org/cancer/screening/american-cancer-society-guidelines-for-the-early-detection-of-cancer.html

References

Lirov R, Tobias E, Lerario AM, Hammer GD. _____s,tations for the lines-fo Damme3ning/,R4|D. _4

Abeloff's Clinical Oncology. 5th ed. Philadelphia, PA. Elsevier: 2014: 1112-1142.

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Signs and Symptoms of Adrenal Cancers

For 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 structures. If you or your child have any of the signs or symptoms described here, tell your doctor right away. These symptoms may be caused by an adrenal tumor or by something else. Getting the right medical tests is the only way to find out and to get the proper treatment, if needed.

- [Symptoms caused by androgen or estrogen production](#)
- [Symptoms caused by cortisol production](#)
- [Symptoms caused by aldosterone production](#)
- [Symptoms caused by a large adrenal cancer pressing on nearby organs](#)

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 hair growth on the face and body (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. They can develop breasts and start menstrual periods. 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

Because there are other causes of high cortisol levels that can lead to Cushing syndrome, doctors do a number of [tests](#)¹ to find out whether the patient has an adrenal cortical tumor or something else that could be causing Cushing syndrome.

Symptoms caused by aldosterone production

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

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

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 structures and tissues. This may cause:

- Pain near the tumor
- A feeling of fullness in the abdomen
- Trouble eating because of a feeling of filling up quickly

Hyperlinks

1. www.cancer.orgfile:///C:/cancer/diagnosis-staging/tests.html

References

Antoniou-Tsigkos A, Zapanti E, Ghizzoni L, Mastorakos G. Adrenal Androgens. 2019 Jan 5. In: Feingold KR, Anawalt B, Blackman MR, Boyce A, Chrousos G, Corpas E, de Herder WW, , et al, editors. Endotext [Internet]. South Dartmouth (MA): MDText.com, Inc.; 2000—. PMID: 25905167.

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Schneider DF, Mazeh H, Lubner SJ, Jaume JC, Chen H. Cancer of the endocrine system In: Neiderhuber JE, Armitage JO, Doroshow JH, Kastan MB, Tepper JE, eds. *Abeloff's Clinical Oncology*. 5th ed. Philadelphia, PA. Elsevier: 2014: 1112-1142.

Turcu AF, Yang J, Vaidya A. Primary aldosteronism - a multidimensional syndrome. *Nat Rev Endocrinol*. 2022 Nov;18(11):665-682. Epub 2022 Aug 31. PMID: 36045149.

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Tests for Adrenal Cancer

Adrenal cancer might be found because of signs or symptoms a person is having, or it might be found because of lab tests or imaging tests a person is getting for some other reason.

- [Medical history and physical exam](#)
- [Imaging tests](#)
- [Other tests](#)
- [Blood and urine tests for adrenal hormones](#)

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).
- You probably will have blood and urine tests to look for high levels of the hormones made by some adrenal tumors.
- If an adrenal tumor is suspected, you might have imaging tests 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](#)¹ to remove the cancer. Generally, doctors would **not** recommend an initial biopsy, which is removing a sample of the tumor to look at it under the microscope to see if it is cancer. If the tumor looks suspicious on imaging tests, it will be removed if possible.

Imaging tests

Computed tomography (CT)

Adrenal glands show up well on [CT scans](#)² and the location of the cancer can usually be confirmed. CT scans also can often help determine if the cancer has spread to lymph nodes and other organs. These findings can help doctors determine if the adrenal tumor is an adenoma or a carcinoma (cancer), by looking at the following:

- **Size:** Tumors larger than 4 cm (1.5 inches) suggest adrenal cancer.
- **Shape:** Irregularly shaped adrenal tumors suggest adrenal cancer.
- **Density:** Low density generally indicates the presence of fat, which is suggestive of an adenoma. Density is measured using Hounsfield units (HU) on CT scan. HU less than 10 is suggestive of an adenoma.

Magnetic resonance imaging (MRI)

Like CT scans, [MRI scans](#)³ show detailed images of soft tissues in the body. While a CT scan is the most common form of imaging used for adrenal tumors, MRI is used in certain situations:

- **To avoid exposure to radiation:** MRI scans use radio waves and strong magnets instead of x-rays.

- **To gather more information:** MRI scans can better distinguish adrenal cancers from benign tumors.

To look for a tumor in the brain: In some people with higher-than-normal cortisol levels, an MRI of the brain may be done to examine the pituitary gland, which is a gland that lies under the front of the brain and makes hormones, including the adrenocorticotrophic hormone (ACTH). Imaging of the pituitary gland can help doctors better understand if an [ACTH-producing tumor](#) is causing the symptoms.

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.

Hyperlinks

1. www.cancer.org/cancer/types/adrenal-cancer/treating/surgery.html
2. www.cancer.org/cancer/diagnosis-staging/tests/imaging-tests/ct-scan-for-cancer.html
3. www.cancer.org/cancer/diagnosis-staging/tests/imaging-tests/mri-for-cancer.html
4. www.cancer.org/cancer/diagnosis-staging/tests/imaging-tests/nuclear-medicine-scans-for-cancer.html
5. www.cancer.org/cancer/diagnosis-staging/tests/biopsy-and-cytology-tests.html

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Adrenal Cancer Stages

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

		N1 M0	The cancer has spread to nearby lymph nodes (N1) but not to distant sites (M0).
		OR	
		T3 Any N M0	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).
		OR	
		T4 Any N M0	The tumor is growing into nearby organs, such as the kidney, pancreas, spleen, and liver or large blood vessels (renal vein or vena cava). 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).
IV	IV	Any T Any N M1	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

Hyperlinks

1. www.cancer.org/cancer/types/adrenal-cancer/treating/surgery.html

References

American Joint Committee on Cancer. Adrenal Cortical. In: *AJCC Cancer Staging Manual*. 8th ed. New York: Springer. 2017:911-918.

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Survival Rates for Adrenal Cancer

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

- [What is a 5-year relative survival rate?](#)
 - [Where do these numbers come from?](#)
 - [5-year relative survival rates for adrenal cancer](#)
 - [Understanding the numbers](#)
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- [What is a 5-year relative survival rate?](#)
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 - [5-year relative survival rates for adrenal cancer](#)
 - [Understanding the numbers](#)

Keep in mind that survival rates are estimates and are often based on previous outcomes of large numbers of people who had a specific cancer, but they can't predict what will happen in any particular person's case. These statistics can be confusing and may lead you to have more questions. Ask your doctor how these numbers might apply to you.

What is a 5-year relative survival rate?

A **relative survival rate** compares people with the same type and stage of cancer to people in the overall population. For example, if the **5-year relative survival rate** for a specific stage of adrenal cancer is 80%, it means that people who have that cancer are, on average, about 80% as likely as people who don't have that cancer to live for at least 5 years after being diagnosed.

Where do these numbers come from?

The American Cancer Society relies on information from the Surveillance, Epidemiology, and End Results (SEER) database, maintained by the National Cancer Institute (NCI), to provide survival statistics for different types of cancer.

The SEER database tracks 5-year relative survival rates for adrenal cancer in the United States, based on how far the cancer has spread. The SEER database, however, does not group cancers by [AJCC/ENSAT stages](#) (stage 1, stage 2, stage 3, etc.). Instead, it groups cancers into localized, regional, and distant stages:

- **Localized:** There is no sign that the cancer has spread outside of the adrenal gland.
- **Regional:** The cancer has spread outside the adrenal gland to nearby structures or lymph nodes.
- **Distant:** The cancer has spread to distant parts of the body, such as the liver or lungs.

5-year relative survival rates for adrenal cancer

These numbers are based on people diagnosed with cancers of the adrenal gland between 2012 and 2018.

SEER* stage	5-year relative survival rate
Localized	73%
Regional	53%
Distant	38%
All SEER stages combined	50%

*SEER = Surveillance, Epidemiology, and End Results

Understanding the numbers

- **These numbers apply only to the stage of the cancer when it is first diagnosed.** They do not apply later on if the cancer grows, spreads, or comes back after treatment.

- Will I need other [tests](#) before we can decide on treatment?
- Do I need to see any other doctors or health professionals?
- Is this type of adrenal cancer hereditary? Should I consider genetic testing?
- If I'm concerned about the costs and insurance coverage for my diagnosis and treatment, who can help me?

When deciding on a treatment plan

- What are my [treatment](#)¹ choices?
- Does my cancer need to be treated right away, or can it be [watched closely](#)²?
- How much experience do you have treating this type of cancer?
- Should I get a [second opinion](#)³? How do I do that?
- What is the goal of treatment?
- What [side effects](#)⁴ should I expect from my treatments?
- What should I do to be ready for treatment?
- What will treatment be like?
- Where will treatment be done?
- What if I have trouble getting to and from my treatments because of transportation problems?
- Is my tumor secreting excessive amounts of hormones? If so, how will we treat the hormone excess?

During treatment

Once treatment begins, you'll need to know what to expect and what to look for. Not all these questions may apply to you, but asking the ones that do may be helpful.

- What should I do to be ready for treatment?
- What are the treatments like?
- How long will treatment last?
- Where will the treatments be given?
- What risks or side effects should I be watchful for?
- Are there things I can do to reduce the side effects?
- How might treatment affect my daily activities? Can I still work full time?

- Do I need to change what I eat during treatment?
- Can I exercise during treatment? If so, what kind of exercise should I do?
- If I start to feel overwhelmed, depressed, or distressed, can you suggest a mental health professional I can see?
- What if I need social support during treatment?

After treatment

- How long will it take to recover from treatment?
- When can I [go back to work](#)⁵ after treatment?
- Do I need to follow a special diet after treatment?
- Are there any limits on what I can do?
- What side effects or symptoms should I watch for?
- How often will I need to have follow-up exams and imaging tests?
- How will we know if the cancer has come back? What should I watch for?

Along with these sample questions, be sure to write down some of your own. For instance, you might want more information about recovery times so you can plan your work or activity schedule. You might also want to ask about [clinical trials](#)⁶ for which you may qualify.

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](#)⁷.

Hyperlinks

1. www.cancer.org/cancer/managing-cancer/treatment-types.html
2. www.cancer.org/cancer/types/adrenal-cancer/treating/by-stage.html
3. www.cancer.org/cancer/managing-cancer/finding-care/seeking-a-second-opinion.html
4. www.cancer.org/cancer/managing-cancer/side-effects.html
5. www.cancer.org/cancer/survivorship/be-healthy-after-treatment/returning-to-work-after-cancer-treatment.html
6. www.cancer.org/cancer/managing-cancer/making-treatment-decisions/clinical-

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7. www.cancer.org/cancer/managing-cancer/finding-care/the-doctor-patient-relationship.html

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