

What are the key statistics about endometrial cancer?

In the United States, cancer of the endometrium is the most common cancer of the female reproductive organs. The American Cancer Society estimates for cancer of the uterus in the United States for 2014 are:

About 52,630 new cases of cancer of the body of the uterus (uterine body or corpus) will be diagnosed.

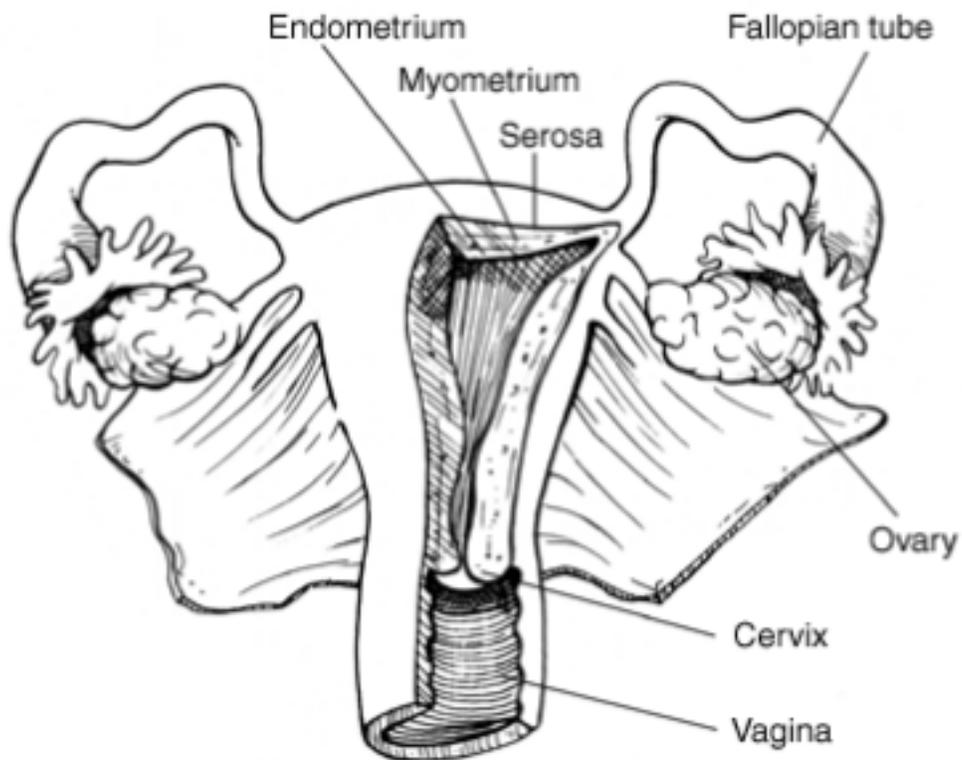
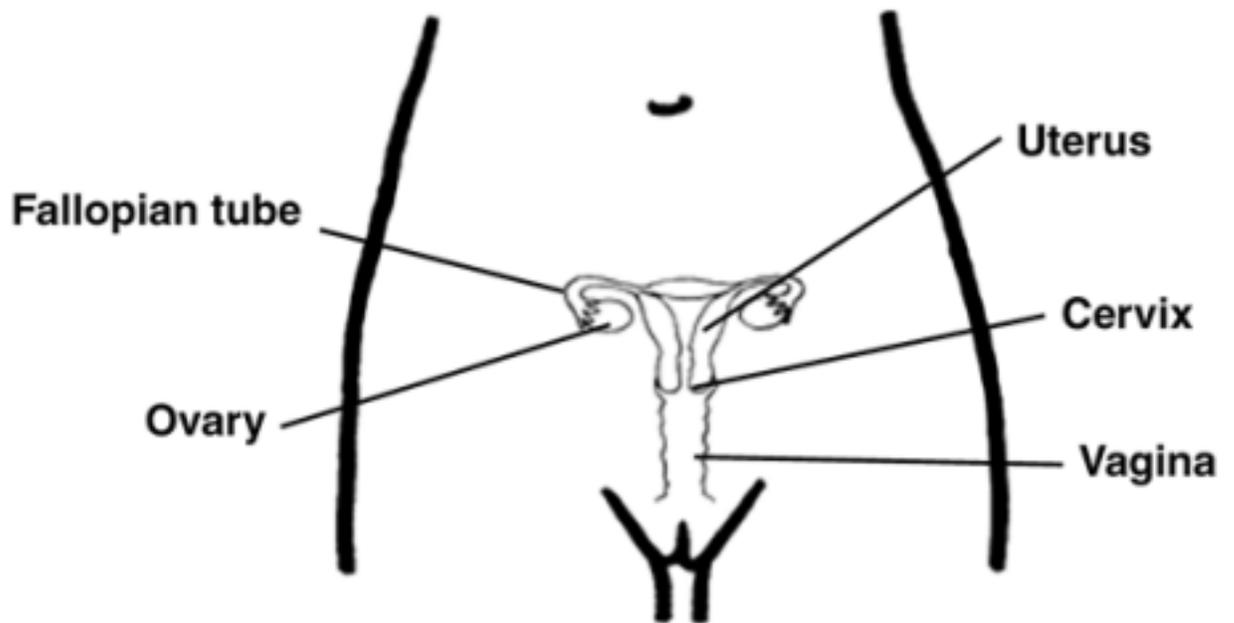
About 8,590 women will die from cancers of the uterine body.

These estimates include both endometrial cancers and uterine sarcomas. About 2% of uterine body cancers are sarcomas, so the actual numbers for endometrial cancer cases and deaths are slightly lower than these estimates.

Endometrial cancer is rare in women under the age of 45. Most (about 3 out of 4) cases are found in women aged 55 and over. The average chance of a woman being diagnosed with this cancer during her lifetime is about one in 37. There are over 600,000 women who are survivors of this cancer. This cancer is slightly more common in white women, but black women are more likely to die from it.

What is endometrial cancer?

Endometrial cancer is a cancer that starts in the endometrium, the inner lining of the *uterus* (womb). The picture below shows where the uterus is located.



About the uterus and endometrium

The uterus is a hollow organ, about the size and shape of a medium-sized pear. The uterus is where a fetus grows and develops when a woman is pregnant. The uterus has 2 main parts (see picture above). The *cervix* is the lower end of the uterus that extends into the vagina. The upper part of the uterus is called the *body* or the *corpus*. (*Corpus* is the Latin word for body.) Although the cervix is technically part of the uterus, when people talk about the uterus, they usually mean the body, not the cervix.

The body of the uterus has 2 main layers. The inner layer or lining is called the *endometrium*. The outer layer of muscle is known as the *myometrium*. This thick layer of muscle is needed to push the baby out during birth. The tissue coating the outside of the uterus is the *serosa*.

Hormone changes during a woman's menstrual cycle cause the endometrium to change. During the early part of the cycle, before the ovaries release an egg (ovulation), the ovaries produce hormones called *estrogens*. Estrogen causes the endometrium to thicken so that it could nourish an embryo if pregnancy occurs. If there is no pregnancy, estrogen is produced in lower amounts and more of the hormone called *progesterone* is made after ovulation. This causes the innermost layer of the lining to prepare to shed. By the end of the cycle, the endometrial lining is shed from the uterus and becomes the menstrual flow (period). This cycle repeats throughout a woman's life until menopause (change of life).

Cancers of the uterus and endometrium

Nearly all cancers of the uterus start in the endometrium and are called *endometrial carcinomas*. Cancers can also start in the muscle layer or supporting connective tissue of the uterus. These cancers belong to the group of cancers called *sarcomas*.

Carcinomas

Endometrial cancers start in the cells that line the uterus and belong to the group of cancers called *carcinomas*. Most endometrial carcinomas are cancers of the cells that form glands in the endometrium. These are called *adenocarcinomas*. The most common type of endometrial cancer is called *endometrioid adenocarcinoma*. Other less common types of endometrial carcinomas include *squamous cell* and *undifferentiated*.

Over 80% of endometrial cancers are typical adenocarcinomas -- also known as *endometrioid*. Endometrioid cancers are made up of cells in glands that look much like the normal uterine lining (endometrium). Some

of these cancers contain squamous cells (squamous cells are flat, thin cells that can be found on the outer surface of the cervix), as well as glandular cells. A cancer with both types of cells is called an *adenocarcinoma with squamous differentiation*. If, under the microscope, the glandular cells look cancerous but the squamous cells don't, the tumor may be called an *adenoacanthoma*. If both the squamous cells and the glandular cells look malignant (cancerous), these tumors can be called *adenosquamous* carcinomas. There are other types of endometrioid cancers, such as *secretory carcinoma*, *ciliated carcinoma*, and *mucinous adenocarcinoma*.

The *grade* of an endometrioid cancer is based on how much the cancer forms glands that look similar to the glands found in normal, healthy endometrium. In lower-grade cancers, more of the cancerous tissue forms glands. In higher-grade cancers, more of the cancer cells are arranged in a haphazard or disorganized way and do not form glands.

Grade 1 tumors have 95% or more of the cancerous tissue forming glands.

Grade 2 tumors have between 50% and 94% of the cancerous tissue forming glands.

Grade 3 tumors have less than half of the cancerous tissue forming glands. Grade 3 cancers are called "high-grade." They tend to be aggressive and have a poorer outlook than lower grade cancers (grades 1 and 2).

Some less common forms of endometrial adenocarcinoma are *clear-cell carcinoma*, *serous carcinoma* (also called *papillary serous carcinoma*), and *poorly differentiated carcinoma*. These cancers are more aggressive than most endometrial cancers. They tend to grow quickly and often have spread outside the uterus at the time of diagnosis.

Doctors sometimes divide endometrial carcinoma into 2 types based on their outlook and underlying causes. "Type 1" cancers are thought to be caused by excess estrogen. They are usually not very aggressive and are slow to spread to other tissues. Grades 1 and 2 endometrioid cancers are "type 1" endometrial cancers. A small number of endometrial cancers are "type 2." Experts aren't sure what causes type 2 cancers, but they don't seem to be caused by too much estrogen. Serous carcinoma, clear-cell carcinoma, poorly differentiated carcinoma, and grade 3 endometrioid carcinoma are all type 2 cancers. These cancers don't look at all like

normal endometrium and so are called "poorly differentiated" or "high-grade." Because type 2 cancers are more likely to grow and spread outside of the uterus, they have a poorer outlook (than type 1 cancers). Doctors tend to treat these cancers more aggressively.

Uterine carcinosarcoma (CS) is another cancer that starts in the endometrium and is included in this document. When looked at under the microscope, this cancer has features of both endometrial carcinoma and sarcoma. In the past, CS was considered a type of uterine sarcoma, but many doctors now believe that CS may actually be a form of poorly differentiated carcinoma.

Uterine CS has many things in common with type 2 endometrial carcinoma. For example, they have similar risk factors. These cancers are also similar in how they spread and are treated. CSs are also known as *malignant mixed mesodermal tumors* or *malignant mixed mullerian tumors* (MMMTs). They make up about 4% of uterine cancers.

Uterine sarcomas

Cancer can also start in the supporting connective tissue (stroma) and muscle cells of the uterus. These cancers are called *uterine sarcomas*. They are much less common than endometrial carcinoma. These include:

Stromal sarcomas, which start in the supporting connective tissue of the endometrium

Leiomyosarcomas, which start in the myometrium or muscular wall of the uterus

These cancers are not discussed in this document because their treatment and prognosis (outlook) are different from the most common cancers of the endometrium. These cancers are discussed in our document [Uterine Sarcoma](#).

Cervical cancers

Cancers that start in the cervix and then spread to the body of the uterus are different from cancers that start in the body of the uterus; the former are described in our document [Cervical Cancer](#)

What are the risk factors for endometrial cancer?

A risk factor is anything that changes your 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. Smoking is a risk factor for many cancers.

There are different kinds of risk factors. Some, such as your age or race, can't be changed. Others are related to personal choices such as smoking, exercising, body weight, drinking, or diet. Some factors influence risk more than others. Although certain factors increase a woman's risk for developing endometrial cancer, they do not always cause the disease. Many women with one or more risk factors never develop endometrial cancer. Some women with endometrial cancer do not have any known risk factors. Even if a woman with endometrial cancer has one or more risk factors, there is no way to know which, if any, of these factors was responsible for her cancer.

Hormone factors

A woman's hormone balance plays a part in the development of most endometrial cancers. Many of the risk factors for endometrial cancer affect estrogen levels. Before menopause, the ovaries are the main source of the 2 main types of female hormones -- estrogen and progesterone. The balance between these hormones changes during a woman's menstrual cycle each month. This produces a woman's monthly periods and keeps the endometrium healthy. A shift in the balance of these two hormones toward more estrogen increases a woman's risk for developing endometrial cancer. After menopause, the ovaries stop making these hormones, but a small amount of estrogen is still made naturally in fat tissue. This estrogen has a bigger impact after menopause than it does before menopause. Female hormones are also available to take (as a medicine) in birth control pills to prevent pregnancy and as hormone therapy to treat symptoms of menopause.

Estrogen therapy

Treating the symptoms of menopause with estrogen is known as *estrogen therapy* or *menopausal hormone therapy*. Estrogen is available in many different forms such as pills, skin patches, creams, shots, and vaginal rings to treat the symptoms of menopause. Estrogen treatment can reduce hot

flashes, improve vaginal dryness, and help prevent the weakening of the bones (osteoporosis) that can occur with menopause. Doctors have found, however, that using estrogen alone (without progesterone) can lead to endometrial cancer in women who still have a uterus. Progesterone-like drugs must be given along with estrogen to reduce the increased risk of endometrial cancer. This approach is called *combination hormone therapy*.

Giving progesterone along with estrogen does not cause endometrial cancer, but it does still have risks. Studies have shown that this combination increases a woman's chance of developing breast cancer and also increases the risk of serious blood clots.

Studies have shown that estrogen therapy increases a woman's chance of developing serious blood clots and heart disease. If you are taking (or plan to take) hormones after menopause, it is important for you to discuss the potential risks (including cancer, blood clots, heart attacks, and stroke) with your doctor. Like any other medicine, hormones should be used only at the lowest dose that is needed and for the shortest possible time to control symptoms. You should also have yearly follow-up pelvic exams. If you have any abnormal bleeding or discharge from the vagina you should see your doctor or other health care provider right away.

Birth control pills

Using birth control pills (oral contraceptives) lowers the risk of endometrial cancer. The risk is lowest in women who take the pill for a long time, and this protection continues for at least ten years after a woman stops taking this form of birth control. However, it is important to look at all of the risks and benefits when choosing a contraceptive method; endometrial cancer risk is only one factor to be considered. It's a good idea to discuss the pros and cons of different types of birth control with your doctor.

Total number of menstrual cycles

Having more menstrual cycles during a woman's lifetime raises her risk of endometrial cancer. Starting menstrual periods (menarche) before age 12 and/or going through menopause later in life raises the risk. Starting periods early is less a risk factor for women with early menopause. Likewise, late menopause may not lead to a higher risk in women whose periods began later in their teens.

Pregnancy

The hormonal balance shifts toward more progesterone during pregnancy. So having many pregnancies protects against endometrial cancer. Women who have never been pregnant have a higher risk, especially if they were also infertile (unable to become pregnant).

Obesity

Most of a woman's estrogen is produced by her ovaries, but fat tissue can change some other hormones into estrogens. Having more fat tissue can increase a woman's estrogen levels, which increases her endometrial cancer risk. In comparison with women who maintain a healthy weight, endometrial cancer is twice as common in overweight women, and more than three times as common in obese women.

Tamoxifen

[Tamoxifen](#) is a drug that is used to prevent and treat [breast cancer](#). Tamoxifen acts as an anti-estrogen in breast tissue, but it acts like an estrogen in the uterus. In women who have gone through menopause, it can cause the uterine lining to grow, which increases the risk of endometrial cancer.

The risk of developing endometrial cancer from tamoxifen is low (less than 1% per year). Women taking tamoxifen must balance this risk against the value of this drug in treating and preventing breast cancer. This is an issue women should discuss with their doctors. If you are taking tamoxifen, you should have yearly gynecologic exams and should be sure to report any abnormal bleeding, as this could be a sign of endometrial cancer.

Ovarian tumors

A certain type of ovarian tumor, the *granulosa-theca cell tumor*, often makes estrogen. Estrogen release by one of these tumors is not controlled the way hormone release from the ovaries is, which can sometimes lead to high estrogen levels. The resulting hormone imbalance can stimulate the endometrium and even lead to endometrial cancer. In fact, sometimes vaginal bleeding from endometrial cancer is the first symptom of one of these tumors.

Polycystic ovarian syndrome

Women with a condition called polycystic ovarian syndrome (PCOS) have abnormal hormone levels, such as higher androgen (male hormones) and

estrogen levels and lower levels of progesterone. The increase in estrogen relative to progesterone can increase a woman's chance of getting endometrial cancer.

Use of an intrauterine device

Women who used an intrauterine device (IUD) for birth control seem to have a lower risk of getting endometrial cancer. Information about this protective effect is limited to IUDs that do not contain hormones. Researchers have not yet studied whether newer types of IUDs that release progesterone have any effect of endometrial cancer risk. However, these IUDs are sometimes used to treat pre-cancers and early endometrial cancers in women who wish to preserve child-bearing ability.

Age

The risk of endometrial cancer increases as a woman gets older.

Diet and exercise

A high-fat diet can increase the risk of several cancers, including endometrial cancer. Because fatty foods are also high-calorie foods, a high fat diet can lead to obesity, which is a well-known endometrial cancer risk factor. Many scientists think this is the main way in which a high fat diet raises endometrial cancer risk. Some scientists think that fatty foods may also have a direct effect on estrogen metabolism, which increases endometrial cancer risk.

Physical activity protects against endometrial cancer. Several studies found that women who exercised more had a lower risk of this cancer, while in one study women who spent more time sitting had a higher risk. To learn more, you can read the [*American Cancer Society Guidelines on Nutrition and Physical Activity for Cancer Prevention*](#).

Diabetes

Endometrial cancer may be as much as 4 times more common in women with diabetes. Diabetes is more common in people who are overweight, but even people with diabetes who are not overweight have a higher risk of endometrial cancer.

Family history

Endometrial cancer tends to run in some families. Some of these families also have an inherited tendency to develop [colon cancer](#). This disorder is called *hereditary nonpolyposis colon cancer* (HNPCC). Another name for HNPCC is Lynch syndrome. In most cases, this disorder is caused by a defect in either the gene *MLH1* or the gene *MSH2*. But at least 5 other genes can cause HNPCC: *MLH3*, *MSH6*, *TGBR2*, *PMS1*, and *PMS2*. An abnormal copy of any one of these genes reduces the body's ability to repair damage to its DNA. This results in a very high risk of colon cancer, as well as a high risk of endometrial cancer. Women with this syndrome have a 40% to 60% risk of developing endometrial cancer sometime during their lives. The risk of ovarian cancer is also increased. General information about inherited cancer syndromes can be found in our document [Heredity and Cancer](#).

There are some families that have a high rate of only endometrial cancer. These families may have a different genetic disorder that hasn't been discovered yet.

Breast or ovarian cancer

Women who have had [breast cancer](#) or [ovarian cancer](#) may have an increased risk of developing endometrial cancer. Some of the dietary, hormonal, and reproductive risk factors for breast and ovarian cancer also increase endometrial cancer risk.

Prior pelvic radiation therapy

Radiation used to treat some other cancers can damage the DNA of cells, sometimes increasing the risk of a second type of cancer such as endometrial cancer.

Endometrial hyperplasia

Endometrial hyperplasia is an increased growth of the endometrium. Mild or simple hyperplasia, the most common type, has a very small risk of becoming cancerous. It may go away on its own or after treatment with hormone therapy. If the hyperplasia is called "atypical," it has a higher chance of becoming a cancer. Simple atypical hyperplasia turns into cancer in about 8% of cases if it is not treated. Complex atypical hyperplasia (CAH) has a risk of becoming cancerous if not treated in up to 29% of cases. For this reason, CAH is usually treated. (Treatment is discussed in the section "[Can endometrial cancer be prevented?](#)")

Do we know what causes endometrial cancer?

We do not yet know exactly what causes most cases of endometrial cancer, but we do know that there are certain risk factors, particularly hormone imbalance, for this type of cancer. A great deal of research is going on to learn more about the disease. We know that most endometrial cancer cells contain estrogen and/or progesterone receptors on their surfaces. Somehow, interaction of these receptors with their hormones leads to increased growth of the endometrium. This can mark the beginning of cancer. The increased growth can become more and more abnormal until it develops into a cancer.

As noted in the [previous section about risk factors](#), many of the known endometrial cancer risk factors affect the balance between estrogen and progesterone in the body.

Scientists are learning more about changes in the DNA of certain genes that occur when normal endometrial cells become cancerous. Some of these are discussed in the section "[What's new in endometrial cancer research and treatment?](#)"

Can endometrial cancer be prevented?

Most cases of endometrial cancer cannot be prevented, but there are some things that may lower your risk of developing this disease.

One way to lower endometrial cancer risk is to change [risk factors](#) whenever possible. For example, women who are overweight or obese have up to 3½ times the risk of getting endometrial cancer as compared to women with a healthy weight. [Getting to and maintaining a healthy weight](#) is one way to lower the risk of this cancer.

Studies have also linked higher levels of physical activity to lower risks of endometrial cancer, so engaging in regular physical activity (exercise) may also be a way to help lower endometrial cancer risk. An active lifestyle can help you maintain a healthy weight, as well as lowering the risk of high blood pressure and diabetes (other risk factors for endometrial cancer).

Estrogen to treat the symptoms of menopause is available in many

different forms like pills, skin patches, shots, creams, and vaginal rings. If you are thinking about using estrogen for menopausal symptoms, ask your doctor about how it will affect your risk of endometrial cancer. Progestins (progesterone-like drugs) can reduce the risk of endometrial cancer in women taking estrogen therapy, but this combination increases the risk of breast cancer. If you still have your uterus and are taking estrogen therapy, discuss this issue with your doctor.

Getting proper treatment of pre-cancerous disorders of the endometrium is another way to lower the risk of endometrial cancer. Most endometrial cancers develop over a period of years. Many are known to follow and possibly start from less serious abnormalities of the endometrium called *endometrial hyperplasia* (see the section "[What are the risk factors for endometrial cancer?](#)"). Some cases of hyperplasia will go away without treatment, but it sometimes needs to be treated with hormones or even surgery. Treatment with progestins (see the section "[Hormone therapy for endometrial cancer](#)") and a dilation and curettage (D&C) or hysterectomy can prevent hyperplasia from becoming cancerous. (D&C is described in the section "[How is endometrial cancer diagnosed?](#)") Abnormal vaginal bleeding is the most common [symptom of endometrial pre-cancers and cancers](#), and it needs to be reported and evaluated right away.

Women with hereditary nonpolyposis colon cancer (HNPCC, Lynch syndrome) have a very high risk of endometrial cancer. A woman with HNPCC may choose to have her uterus removed (a hysterectomy) after she has finished having children to prevent endometrial cancer. One study found that none of 61 women with HNPCC who had prophylactic (preventative) hysterectomies was later found to have endometrial cancer, while 1/3 of the women who didn't have the surgery did go on to be diagnosed with endometrial cancer over the next 7 years.

Can endometrial cancer be found early?

In most cases, noticing any signs and symptoms of endometrial cancer, such as abnormal vaginal bleeding or discharge (that is increasing in amount, occurring between periods, or occurring after menopause), and reporting them right away to your doctor allows the disease to be [diagnosed](#) at an early [stage](#). Early detection improves the chances that your cancer will be treated successfully. But some endometrial cancers may reach an advanced stage before signs and symptoms can be noticed.

More information about the signs and symptoms of endometrial cancer can be found in the section [“Signs and symptoms of endometrial cancer”](#)

Early detection tests

Early detection (also called screening) refers to the use of tests to find a disease such as cancer in people who do not have symptoms of that disease.

Women at average endometrial cancer risk

At this time, there are no screening tests or exams to find endometrial cancer early in women who are at average endometrial cancer risk and have no symptoms.

The American Cancer Society recommends that, at the time of menopause, all women should be told about the risks and symptoms of endometrial cancer and strongly encouraged to report any vaginal bleeding, discharge, or spotting to their doctor.

Women should talk to their doctors about getting regular pelvic exams. A pelvic exam can find some cancers, including some advanced [uterine cancers](#), but it is not very effective in finding early endometrial cancers.

The Pap test (or Pap smear), which screens for [cervical cancer](#), can occasionally find some early endometrial cancers, but it is not a good test for this type of cancer. The Pap test is very effective in finding early cancers of the cervix (the lower part of the uterus). For information on screening tests for cervical cancer, see our document [Cervical Cancer: Prevention and Early Detection](#).

Women at increased endometrial cancer risk

The American Cancer Society recommends that most women at increased risk should be informed of their risk and be advised to see their doctor whenever there is any abnormal vaginal bleeding. This includes women whose risk of endometrial cancer is increased due to increasing age, late menopause, never giving birth, infertility, obesity, diabetes, high blood pressure, estrogen treatment, or [tamoxifen](#) therapy.

Women who have (or may have) hereditary nonpolyposis [colon cancer](#) (HNPCC, Lynch syndrome) have a very high risk of endometrial cancer. If colon or endometrial cancer has occurred in several family members, you

might want to think about having genetic counseling to learn about your family's risk of having HNPCC. If you (or a close relative) have genetic testing and are found to have a mutation in one of the genes for HNPCC, you have a high risk of getting endometrial cancer. More information about genetic testing can be found in our document [Genetic Testing: What You Need to Know](#).

The American Cancer Society recommends that women who have (or may have) HNPCC be offered yearly testing for endometrial cancer with endometrial biopsy beginning at age 35. Their doctors should discuss this test with them, including its risks, benefits, and limitations. This applies to women known to carry HNPCC-linked gene mutations, women who are likely to carry such a mutation (those with a mutation known to be present in the family), and women from families with a tendency to get colon cancer where genetic testing has not been done.

Another option for a woman who has (or may have) HNPCC would be to have a hysterectomy once she is finished having children. This was discussed in the section "[Can endometrial cancer be prevented?](#)"

Signs and symptoms of endometrial cancer

There are a few symptoms that may point to endometrial cancer, but some are more common as this cancer becomes advanced.

Unusual vaginal bleeding, spotting, or other discharge

About 90% of patients diagnosed with endometrial cancer have abnormal vaginal bleeding, such as a change in their periods or bleeding between periods or after menopause. This symptom can also occur with some non-cancerous conditions, but it is important to have a doctor look into any irregular bleeding right away. If you have gone through menopause, it is especially important to report any vaginal bleeding, spotting, or abnormal discharge to your doctor.

Non-bloody vaginal discharge may also be a sign of endometrial cancer. Even if you cannot see blood in the discharge, it does not mean there is no cancer. In about 10% of cases, the discharge associated with endometrial cancer is not bloody. Any abnormal discharge should be checked out by

your doctor.

Pelvic pain and/or mass and weight loss

Pain in the pelvis, feeling a mass (tumor), and losing weight without trying can also be symptoms of endometrial cancer. These symptoms are more common in later stages of the disease. Still, any delay in seeking medical help may allow the disease to progress even further. This lowers the odds for successful [treatment](#).

Although any of these can be caused by things other than cancer, it is important to have them [checked out by a doctor](#).

How is endometrial cancer diagnosed?

Most women are not [screened](#) for endometrial cancer, so it is most often diagnosed after a woman sees her doctor because she has symptoms.

History and physical exam

If you have any of the symptoms of endometrial cancer (see the section “[Signs and symptoms of endometrial cancer](#)”), you should visit your doctor. The doctor will ask you about your symptoms, [risk factors](#), and family medical history. The doctor will also perform a general physical exam and a pelvic exam.

Seeing a specialist

If the doctor thinks you might have endometrial cancer, you should be examined by a gynecologist, a doctor qualified to diagnose and treat diseases of the female reproductive system. Gynecologists can diagnose endometrial cancer, as well as treat some early cases. Specialists in treating cancers of the endometrium and other female reproductive organs are called gynecologic oncologists. These doctors treat both early and advanced cases of endometrial cancer.

Sampling endometrial tissue

To find out whether endometrial hyperplasia or endometrial cancer is present, the doctor must remove some tissue so that it can be looked at

under a microscope. Endometrial tissue can be obtained by endometrial biopsy or by dilation and curettage (D&C) with or without a hysteroscopy. A specialist such as a gynecologist usually does these procedures, which are described below.

Endometrial biopsy

An endometrial biopsy is the most commonly performed test for endometrial cancer and is very accurate in postmenopausal women. It can be done in the doctor's office. In this procedure a very thin flexible tube is inserted into the uterus through the cervix. Then, using suction, a small amount of endometrium is removed through the tube. The suctioning takes about a minute or less. The discomfort is similar to menstrual cramps and can be helped by taking a nonsteroidal anti-inflammatory drug such as ibuprofen before the procedure. Sometimes numbing medicine (local anesthetic) is injected into the cervix just before the procedure to help reduce the pain.

Hysteroscopy

For this technique doctors insert a tiny telescope (about 1/6 inch in diameter) into the uterus through the cervix. To get a better view of the inside of the uterus, the uterus is filled with salt water (saline). This lets the doctor see and biopsy anything abnormal, such as a cancer or a polyp. This is usually done with the patient awake, using a local anesthesia (numbing medicine).

Dilation and curettage (D&C)

If the endometrial biopsy sample doesn't provide enough tissue, or if the biopsy suggests cancer but the results are uncertain, a D&C must be done. In this outpatient procedure, the opening of the cervix is enlarged (dilated) and a special instrument is used to scrape tissue from inside the uterus. This may be done with or without a hysteroscopy.

The procedure takes about an hour and may require general anesthesia (where you are asleep) or conscious sedation (medicine given into a vein to make you drowsy) either with local anesthesia injected into the cervix or a spinal (or epidural). A D&C is usually done in an outpatient surgery area of a clinic or hospital. Most women have little discomfort after this procedure.

Testing of endometrial tissue

Endometrial tissue samples removed by biopsy or D&C are looked at under the microscope to see whether cancer is present. If cancer is found, the lab report will state what type of endometrial cancer it is (like endometrioid or clear cell) and what grade it is.

Endometrial cancer is graded on a scale of 1 to 3 based on how much it looks like normal endometrium. (This was detailed in the section “[What is endometrial cancer?](#)”) Women with lower grade cancers are less likely to have advanced disease or recurrences.

If the doctor suspects hereditary nonpolyposis [colon cancer](#) (HNPCC) as an underlying cause of the endometrial cancer, the tumor tissue can be tested for protein changes (such as having fewer mismatch repair proteins) or DNA changes (called microsatellite instability, or MSI) that can happen when one of the genes that causes HNPCC is faulty. If these protein or DNA changes are present, the doctor may recommend that you see a genetic counselor to consider genetic testing for the genes that cause HNPCC. Testing for low mismatch repair protein levels or for MSI is most often ordered in women diagnosed with endometrial cancer at an earlier than usual age or who have a family history of endometrial or colon cancer.

Imaging tests for endometrial cancer

Transvaginal ultrasound or sonography

Ultrasound tests use sound waves to take pictures of parts of the body. For a *transvaginal ultrasound* a probe that gives off sound waves is inserted into the vagina. The sound waves create images of the uterus and other pelvic organs. These images often help show whether the endometrium is thicker than usual, which can be a sign of endometrial cancer. It may also help see if a cancer is growing into the muscle layer of the uterus (myometrium).

In order for the doctor to see the uterine lining more clearly, salt water (saline) may be put through a small tube into the uterus before the sonogram. This procedure is called a *saline infusion sonogram* or *hysterosonogram*. Sonography may help doctors direct their biopsy if other procedures didn't detect a tumor.

Cystoscopy and proctoscopy

If a woman has problems that suggest the cancer has spread to the

bladder or rectum, the inside of these organs can be looked at through a lighted tube. In *cystoscopy* the tube is placed into the bladder through the urethra. In *proctoscopy* the tube is placed in the rectum. These exams allow the doctor to look for possible cancers. Small tissue samples can also be removed during these procedures for pathologic (microscopic) testing. They can be done using a local anesthetic but some patients may require general anesthesia. Your doctor will let you know what to expect before and after the procedure. These procedures were used more often in the past, but now are rarely part of the work up for endometrial cancer.

Computed tomography (CT)

The CT scan is an x-ray procedure that creates detailed, cross-sectional images of your body. For a CT scan, you lie on a table while an X-ray takes pictures. Instead of taking one picture, like a standard x-ray, a CT scanner takes many pictures as the camera rotates around you. A computer then combines these pictures into an image of a slice of your body. The machine will take pictures of many slices of the part of your body that is being studied.

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

The injection can cause some flushing (redness and warm feeling that may last hours to days). A few people are allergic to the dye and get hives. Rarely, more serious reactions like trouble breathing and low blood pressure can occur. Medicine can be given to prevent and treat allergic reactions. Be sure to tell the doctor if you have ever had a reaction to any contrast material used for x-rays.

CT scans are not used to diagnose endometrial cancer. However, they may be helpful to see whether the cancer has spread to other organs and to see if the cancer has come back after treatment.

CT scans can also be used to precisely guide a biopsy needle into a suspected area of cancer spread. For this procedure, called a CT-guided needle biopsy, you remain on the CT scanning table while a doctor moves a biopsy needle toward the mass. CT scans are repeated until the doctor is sure that the needle is inside the mass. A fine needle biopsy sample (tiny fragment of tissue) or a core needle biopsy sample (a thin cylinder of

tissue about ½ inch long and less than 1/8 inch in diameter) is removed and looked at under a microscope.

CT scans take longer than regular x-rays. You might feel a bit confined by the ring you lie within when the pictures are being taken.

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. This creates cross sectional slices of the body like a CT scanner and it also produces slices that are parallel with the length of your body.

MRI scans are particularly helpful in looking at the brain and spinal cord. Some doctors also think MRI is a good way to tell whether, and how far, the endometrial cancer has grown into the body of the uterus. MRI scans may also help find enlarged lymph nodes with a special technique that uses very tiny particles of iron oxide. These are given into a vein and settle into lymph nodes where they can be spotted by MRI.

Sometimes a contrast material is injected into a vein, just as with CT scans. The contrast used for MRI is different than the one used for CT, so being allergic to one doesn't mean you are allergic to the other. MRI scans are a little more uncomfortable than CT scans. First, they take longer, often up to an hour. Also, you have to be placed inside a tube, which is confining and can upset people with fear of enclosed places. Special, "open" MRI machines can help with this if needed, however the drawback is that the images may not be as good. The machine also makes a thumping or buzzing noise that you may find disturbing. Many places will provide headphones with music to block this out.

Positron emission tomography (PET)

In this test radioactive glucose (sugar) is given to look for cancer cells. Because cancers use glucose (sugar) at a higher rate than normal tissues, the radioactivity will tend to concentrate in the cancer. A scanner can spot the radioactive deposits. This test can be helpful for spotting small collections of cancer cells. Special scanners combine a PET scan with a CT to more precisely locate areas of cancer spread. PET scans are not a routine part of the work-up of early endometrial cancer, but may be used

for more advanced cases.

Chest x-ray

This test can show whether the cancer has spread to the lungs. It may also be used to look for serious lung or heart problems, especially before [surgery](#).

Blood tests

Complete blood count

The complete blood count (CBC) is a test that measures the different cells in the blood, such as the red blood cells, the white blood cells, and the platelets. Many times women with a lot of blood loss from the uterus will have low red blood cell counts (anemia).

CA 125 blood test

CA 125 is a substance released into the bloodstream by many, but not all, endometrial and ovarian cancers. In someone with endometrial cancer, a very high blood CA 125 level suggests that the cancer has probably spread beyond the uterus. If CA 125 levels are high before surgery, some doctors check follow-up levels to find out how well the treatment is working (levels will drop after surgery if treatment is effective) and to see if the cancer has come back after initially successful treatment.

How is endometrial cancer staged?

Staging is the process of looking at all of the information the doctors have learned about your tumor to tell how much the cancer may have spread. The stage of an endometrial cancer is the most important factor in choosing a treatment plan. Ask your doctor to explain the stage of your cancer so that you can make fully informed choices about your [treatment](#).

Doctors use a staging system to describe how far a patient's cancer has spread. The 2 systems used for staging endometrial cancer, the *FIGO* (International Federation of Gynecology and Obstetrics) system and the American Joint Committee on Cancer TNM staging system are basically the same. They both classify this cancer on the basis of 3 factors: the extent of the tumor (T), whether the cancer has spread to lymph nodes (N) and whether it has spread to distant sites (M). The system described below is the most recent AJCC system, which went into effect January 2010. The

difference between the AJCC system and the FIGO system is that the FIGO system doesn't include stage 0.

Endometrial cancer is staged based on examination of tissue removed during an operation. This is known as *surgical staging*, and means that doctors often can't tell for sure what stage the cancer is in until after surgery is done.

A doctor may order tests before surgery, such as ultrasound, MRI, or CT scan, to look for signs that a cancer has spread. Although it is not as good as the surgical stage, this information can be helpful in planning surgery and other treatments. If these tests show that the cancer may have spread outside the uterus, you may be referred to a gynecologic oncologist (if you are not already seeing one).

The staging system looks at how far the cancer has spread:

It can spread *locally* to the cervix and other parts of the uterus.

It can also spread *regionally* to nearby lymph nodes (bean-sized organs that are part of the immune system). The regional lymph nodes are found in the pelvis and farther away along the aorta (the main artery that runs from the heart down along the back of the abdomen and pelvis). The lymph nodes along the aorta are called para-aortic nodes.

Finally, the cancer can spread (*metastasize*) to distant lymph nodes, the upper abdomen, the omentum (a large fatty sheet of tissue in the abdomen that drapes like an apron over the stomach, intestines, and other organs), or other organs such as lung, liver, bone, and brain.

Tumor extent (T)

T0: No signs of a tumor in the uterus

Tis: Pre-invasive cancer (also called *carcinoma in-situ*). Cancer cells are only found in the surface layer of cells of the endometrium, without growing into the layers of cells below.

T1: The cancer is only growing in the body of the uterus. It may also be growing into the glands of the cervix, but is not growing into the supporting connective tissue of the cervix.

T1a: The cancer is in the endometrium (inner lining of the uterus) and may have grown from the endometrium less than halfway through the underlying muscle layer of the uterus (the myometrium).

T1b: The cancer has grown from the endometrium into the myometrium, growing more than halfway through the myometrium. The cancer has not spread beyond the body of the uterus.

T2: The cancer has spread from the body of the uterus and is growing into the supporting connective tissue of the cervix (called the cervical stroma). The cancer has not spread outside of the uterus.

T3: The cancer has spread outside of the uterus, but has not spread to the inner lining of the rectum or urinary bladder.

T3a: The cancer has spread to the outer surface of the uterus (called the serosa) and/or to the fallopian tubes or ovaries (the adnexa)

T3b: The cancer has spread to the vagina or to the tissues around the uterus (the parametrium).

T4: The cancer has spread to the inner lining of the rectum or urinary bladder (called the mucosa)

Lymph node spread (N)

NX: spread to nearby lymph nodes cannot be assessed

N0: no spread to nearby lymph nodes

N1: cancer has spread to lymph nodes in the pelvis

N2: cancer has spread to lymph nodes along the aorta (peri-aortic lymph nodes)

Distant spread (M)

M0: The cancer has not spread to distant lymph nodes, organs, or tissues

M1: The cancer has spread to distant lymph nodes, the upper abdomen, the omentum, or other organs (such as the lungs or liver)

AJCC stage grouping and FIGO stages

Information about the tumor, lymph nodes, and any cancer spread is then combined to assign the stage of disease. This process is called *stage grouping*. The stages are described using the number 0 and Roman numerals from I to IV. Some stages are divided into sub-stages indicated by letters and numbers.

Stage 0

Tis, N0, M0: This stage is also known as *carcinoma in-situ*. Cancer cells are only found in the surface layer of cells of the endometrium, without growing into the layers of cells below. The cancer has not spread to nearby lymph nodes or distant sites. This is a pre-cancerous lesion. This stage is not included in the FIGO staging system.

Stage I

T1, N0, M0: The cancer is only growing in the body of the uterus. It may also be growing into the glands of the cervix, but is not growing into the supporting connective tissue of the cervix. The cancer has not spread to lymph nodes or distant sites.

Stage IA (T1a, N0, M0): In this earliest form of stage I, the cancer is in the endometrium (inner lining of the uterus) and may have grown from the endometrium less than halfway through the underlying muscle layer of the uterus (the myometrium). It has not spread to lymph nodes or distant sites.

Stage IB (T1b, N0, M0): The cancer has grown from the endometrium into the myometrium, growing more than halfway through the myometrium. The cancer has not spread beyond the body of the uterus.

Stage II

T2, N0, M0: The cancer has spread from the body of the uterus and is growing into the supporting connective tissue of the cervix (called the cervical stroma). The cancer has not spread outside of the uterus. The cancer has not spread to lymph nodes or distant sites.

Stage III

T3, N0, M0: Either the cancer has spread outside of the uterus or into

nearby tissues in the pelvic area.

Stage IIIA (T3a, N0, M0): The cancer has spread to the outer surface of the uterus (called the serosa) and/or to the fallopian tubes or ovaries (the adnexa). The cancer has not spread to lymph nodes or distant sites.

Stage IIIB (T3b, N0, M0): The cancer has spread to the vagina or to the tissues around the uterus (the parametrium). The cancer has not spread to lymph nodes or distant sites.

Stage IIIC1 (T1 to T3, N1, M0): The cancer is growing in the body of the uterus. It may have spread to some nearby tissues, but is not growing into the inside of the bladder or rectum. The cancer has spread to pelvic lymph nodes but not to lymph nodes around the aorta or distant sites.

Stage IIIC2 (T1 to T3, N2, M0): The cancer is growing in the body of the uterus. It may have spread to some nearby tissues, but is not growing into the inside of the bladder or rectum. The cancer has spread to lymph nodes around the aorta (peri-aortic lymph nodes) but not to distant sites.

Stage IV

The cancer has spread to the inner surface of the urinary bladder or the rectum (lower part of the large intestine), to lymph nodes in the groin, and/or to distant organs, such as the bones, omentum or lungs.

Stage IVA (T4, any N, M0): The cancer has spread to the inner lining of the rectum or urinary bladder (called the mucosa). It may or may not have spread to nearby lymph nodes but has not spread to distant sites.

Stage IVB (any T, any N, M1): The cancer has spread to distant lymph nodes, the upper abdomen, the omentum, or to organs away from the uterus, such as the bones, omentum, or lungs. The cancer can be any size and it may or may not have spread to lymph nodes.

Survival by stage of endometrial cancer

Survival rates are often used by doctors as a standard way of discussing a person's prognosis (outlook). Some patients with cancer may want to know the survival statistics for people in similar situations, while others may not find the numbers helpful, or may even not want to know them. If you decide that you don't want to know them, stop reading here and skip to the [next section](#).

The 5-year survival rate refers to the percentage of patients who live at least 5 years after their cancer is diagnosed. Of course, many people live much longer than 5 years (and many are cured). Also, although some people die of their cancer, others die from something else. These are *observed* survival rates, and include deaths from all causes, not just from cancer.

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

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

The numbers below come from the National Cancer Data Base as published in the AJCC Staging Manual in 2010, and are based on people diagnosed between 2000 and 2002.

Endometrial adenocarcinoma

Stage	5-year survival
Stage 0	90%
Stage IA	88%
Stage IB	75%
Stage II	69%
Stage IIIA	58%
Stage IIIB	50%
Stage IIIC	47%
Stage IVA	17%
Stage	15%

e IVB	

The statistics below for uterine carcinosarcoma are different from those given for endometrial adenocarcinoma in some important ways.

The numbers given are for 5-year *relative* survival. These rates assume that some people will die of other causes and compare the observed survival with that expected for people without the cancer. This can better show the impact of a particular type and stage of cancer on survival.

These numbers come from a different source -- the SEER program from the National Cancer Institute.

The stages listed are based on an older version of staging. In the most recent staging system, some of the cancers that were stage III might actually be considered stage I or II.

These differences in staging may make it more difficult to apply these numbers to your own situation.

Uterine carcinosarcoma

Stage	5-year relative survival
Stage I	70%
Stage II	45%
Stage III	30%
Stage IV	15%

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How is endometrial cancer treated?

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

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

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

General treatment information

After all of the test results have been reviewed, your doctor will recommend one or more treatment options. The four basic types of treatment for women with endometrial cancer are:

Surgery

Radiation therapy

Hormonal therapy

Chemotherapy

Surgery is the main treatment for most women with this cancer. But in certain situations, a combination of these treatments may be used. The choice of treatment depends largely on the [type of cancer](#) and [stage](#) of the disease when it is found. Other factors could play a part in choosing the best treatment plan. These might include your age, your overall state of health, whether you plan to have children, and other personal considerations.

It is important to discuss all of your treatment options with your doctors to help make the decision that best fits your needs. (See the section "[What should you ask your doctor about endometrial cancer?](#)") Be sure you understand all the risks and side effects of the different treatment options before making a decision. If there is anything you do not understand, ask to have it explained again.

When considering your treatment options it is often a good idea to seek a

second opinion, if possible. This can provide more information and help you feel confident about the treatment plan you choose. Some insurance companies require a second opinion before they will pay for certain treatments, but a second opinion is usually not required for routine cancer treatments.

The next few sections describe the different types of treatment. This is followed by a section on the [standard treatment options for each stage of endometrial cancer](#).

Surgery for endometrial cancer

Hysterectomy

The main treatment for endometrial cancer is an operation to remove the uterus and cervix (called a hysterectomy). When the uterus is removed through an incision in the abdomen, it is called a simple or total abdominal hysterectomy (TAH). If the uterus is removed through the vagina, it is known as a vaginal hysterectomy. Removing the ovaries and fallopian tubes, a *bilateral salpingo-oophorectomy* (BSO), is not actually part of a hysterectomy; it is a separate procedure that is often done during the same operation (see below). For endometrial cancer, removing the uterus but not the ovaries or fallopian tubes is seldom recommended, but it may be considered in women who are premenopausal. To decide what [stage](#) the cancer is in, lymph nodes in the pelvis and around the aorta will also need to be removed (see below). This can be done through the same incision as the abdominal hysterectomy. If a vaginal hysterectomy is done, lymph nodes can be removed by laparoscopy (this is discussed in detail below).

A *radical hysterectomy* is done when endometrial cancer has spread to the cervix or the area around the cervix (called the *parametrium*). In this operation, the entire uterus, the tissues next to the uterus (parametrium and uterosacral ligaments), and the upper part of the vagina (next to the cervix) are all removed. For endometrial cancer, a BSO is done at the same time. This operation is most often done through an incision in the abdomen, but it can also be done going in through the vagina.

When a vaginal approach is used, *laparoscopy* is used to help safely remove all of the correct tissues. Laparoscopy is a technique that lets the surgeon look at the inside of the abdomen and pelvis through tubes inserted into very small incisions. Small surgical instruments can be controlled through the tubes, allowing the surgeon to operate without a large incision in the abdomen. This can shorten the time needed for recovery from surgery. Both a hysterectomy and a radical hysterectomy can also be done through the abdomen using laparoscopy.

Surgery for endometrial cancer using laparoscopy seems to be just as good as more traditional open procedures if done by a surgeon who has a lot of experience in laparoscopic cancer surgeries. The DaVinci® robot is increasingly used to perform laparoscopic procedures.

For any of these surgeries, either general anesthesia or regional anesthesia will be used so the patient is asleep or sedated during these operations.

Bilateral salpingo-oophorectomy

This operation removes both fallopian tubes and both ovaries. This procedure is usually done at the same time the uterus is removed (either by simple hysterectomy or radical hysterectomy) to treat endometrial cancers. Removing both ovaries means that you will go into menopause if you have not done so already.

If you are younger than 45 when you get stage I endometrial cancer, you may discuss keeping your ovaries with your surgeon, because although women whose ovaries were removed had a lower chance of the cancer coming back, removing the ovaries didn't seem to help them live longer.

Lymph node surgery

Pelvic and para-aortic lymph node dissection: This operation removes lymph nodes from the pelvis and the area next to the aorta to see if they contain cancer cells that have spread from the endometrial tumor. It is called a *lymph node dissection* when most or all of the lymph nodes in a certain area are removed. This procedure is usually done at the same time as the operation to remove the uterus. If you are having an abdominal hysterectomy, the lymph nodes can be removed through the same incision. In women who have had a vaginal hysterectomy, these lymph nodes may be removed by laparoscopic surgery.

Laparoscopy is a technique that lets the surgeon look at the inside of the abdomen and pelvis through tubes inserted into very small incisions. Small surgical instruments can be controlled through the tubes, allowing the surgeon to remove lymph nodes. This approach avoids the need for a large incision in the abdomen so the recovery time is often shorter. A recent study showed that laparoscopic surgery (including lymph node removal) works as well (at least in the short-term) as open abdominal surgery.

Lymph node sampling: When only a few of the lymph nodes in an area are removed, it is called *lymph node sampling*.

Depending on the grade, the amount of cancer in the uterus and how deeply the cancer invades into the muscle of the uterus, lymph nodes may not need to be removed.

Pelvic washings

In this procedure, the surgeon “washes” the abdominal and pelvic cavities with salt water (saline) and sends the fluid to the lab to see if it contains cancer cells. This is also called *peritoneal lavage*.

Other procedures that may be used to look for cancer spread

Omentectomy: The omentum is a layer of fatty tissue that covers the abdominal contents like an apron. Cancer sometimes spreads to this tissue. When this tissue is removed, it is called an *omentectomy*. This may be done at the time of a hysterectomy if cancer has spread there or to check for cancer spread.

Peritoneal biopsies: The tissue lining the pelvis and abdomen is called the peritoneum. Peritoneal biopsies involve removing small pieces of this lining to check for cancer cells.

Tumor debulking

If cancer has spread throughout the abdomen, the surgeon may attempt to remove as much of the tumor as possible. This is called *debulking*. Debulking a cancer can help other treatments, like [radiation](#) or [chemotherapy](#), work better. Tumor debulking is helpful for other types of cancer, and it may also be helpful in treating some types of endometrial cancer.

Recovery after surgery

For an abdominal hysterectomy the hospital stay is usually from 3 to 7 days. The average hospital stay after a radical hysterectomy is about 5 to 7 days. Complete recovery can take about 4 to 6 weeks. A laparoscopic procedure and vaginal hysterectomy usually require a hospital stay of 1 to 2 days and 2 to 3 weeks for recovery. Complications are unusual but could include excessive bleeding, wound infection, and damage to the urinary or intestinal systems.

A radical hysterectomy affects the nerves that control the bladder, so a catheter is used to drain urine and is kept in place for at least a few days after surgery. If the bladder hasn't recovered completely when it is removed, it may be replaced for a time or you may be shown how to insert a catheter yourself several times a day to empty your bladder until bladder function returns.

For more information on surgery for cancer, see our document [Understanding Cancer Surgery: A Guide for Patients and Families](#).

Side effects

Any hysterectomy causes infertility (not being able to start or maintain a pregnancy). For those who were premenopausal before surgery, removing the ovaries will cause menopause. This can lead to symptoms such as hot flashes, night sweats, and vaginal dryness. Removing lymph nodes in the pelvis can lead to a build up of fluid in the legs, a condition called *lymphedema*. This happens more often if radiation is given after surgery. For more on lymphedema, see our document [Understanding Lymphedema – for Cancers Other than Breast Cancer](#).

Surgery and menopausal symptoms can also affect your sex life. For more, you can read our booklet [Sexuality for the Woman With Cancer](#).

Radiation therapy for endometrial cancer

Radiation therapy uses high-energy radiation (such as x-rays) to kill cancer cells. It can be given in two ways:

By placing radioactive materials inside the body near the tumor. This is called internal radiation therapy or *brachytherapy*.

By using a machine that focuses a beam of radiation at the tumor, much like having an x-ray. This is called *external beam radiation therapy*.

In some cases, both brachytherapy and external beam radiation therapy are given. When that is done, usually the external beam radiation is given first, followed by the brachytherapy. The [stage](#) and [grade](#) of the cancer help determine what areas need to be exposed to radiation therapy and which methods are used.

If your treatment plan includes radiation to be given after [surgery](#), you will be given time to heal from the operation before starting radiation. Often, at least 4 to 6 weeks is needed.

Brachytherapy

For vaginal brachytherapy, a cylinder containing a source of radiation is inserted into the vagina. The length of the cylinder (and how much of the vagina is treated) can vary, but the upper part of the vagina is always treated. With this method, the radiation mainly affects the area of the vagina in contact with the cylinder. Nearby structures such as the bladder and rectum get less radiation exposure. The most common side effect is changes to the lining of the vagina (discussed in more detail below).

This procedure is done in the radiation suite of the hospital or care center. The radiation oncologist inserts a special applicator into the woman's vagina, and pellets of radioactive material are inserted into the applicator. There are 2 types of brachytherapy used for endometrial cancer, low-dose rate (LDR) and high-dose rate (HDR).

In LDR brachytherapy, the radiation devices are usually left in place for about 1 to 4 days. The patient needs to stay immobile to keep the radiation sources from moving during treatment, and so she is usually kept in the hospital overnight. Several treatments may be necessary. Because the patient has to stay immobile, this form of brachytherapy carries a risk of serious blood clots in the legs (called deep venous thrombosis or DVT). LDR is less commonly used now in this country.

In HDR brachytherapy, the radiation is more intense. Each dose takes a very short period of time (usually less than an hour), and the patient can return home the same day. For endometrial cancer, HDR brachytherapy is often given weekly or even daily for at least 3 doses.

External beam radiation therapy

In this type of treatment the radiation is delivered from a source outside of the body.

External beam radiation therapy is often given 5-days-a-week for 4 to 6 weeks. The skin covering the treatment area is carefully marked with permanent ink or injected dye similar to a tattoo. A special mold of the pelvis and lower back is custom made to ensure that the woman is placed in the exact same position for each treatment. Each treatment takes less than a half-hour, but the daily visits to the radiation center may be tiring and inconvenient.

Side effects of radiation therapy

Short-term side effects: Common side effects of radiation therapy include

tiredness, upset stomach, or loose bowels. Serious **fatigue**, which may not occur until about 2 weeks after treatment begins, is a common side effect. Diarrhea is common, but can usually be controlled with over-the-counter medicines. **Nausea and vomiting** may also occur, but can be treated with medication. These side effects are more common with pelvic radiation than with vaginal brachytherapy. Side effects tend to be worse when **chemotherapy** is given with radiation.

Skin changes are also common, which can range from mild redness to peeling and blistering. The skin may release fluid, which can lead to infection, so care must be taken to clean and protect the area exposed to radiation. Sometimes, as it heals, the skin in the treated area becomes darker or less flexible (harder).

Radiation can irritate the bladder, and problems with urination may occur. Irritation to the bladder, called *radiation cystitis*, can result in discomfort, blood in the urine, and an urge to urinate often.

Radiation can also cause similar changes in the intestine. When there is rectal irritation or bleeding, it is called *radiation proctitis*. This is sometimes treated with enemas that contain a steroid (like hydrocortisone) or suppositories that contain an anti-inflammatory.

Radiation can irritate the vagina, leading to discomfort and drainage (a discharge). If this, called *radiation vaginitis*, occurs, your radiation doctor may recommend douching with a dilute solution of hydrogen peroxide. When the irritation is severe, open sores can develop in the vagina, which may need to be treated with an estrogen cream.

Radiation can also lead to low blood counts, causing anemia (low red blood cells) and leukopenia (low white blood cells). The blood counts usually return to normal within a few weeks after radiation is stopped.

Long-term side effects: Radiation therapy may cause changes to the lining of the vagina leading to vaginal dryness. This is more common after vaginal brachytherapy than after pelvic radiation therapy. In some cases scar tissue can form in the vagina. The scar tissue can make the vagina shorter or more narrow (called *vaginal stenosis*), which can make sex (vaginal intercourse) painful. A woman can help prevent this problem by stretching the walls of her vagina several times a week. This can be done by having sexual intercourse 3 to 4 times per week or by using a vaginal dilator (a plastic or rubber tube used to stretch out the vagina). Still, vaginal dryness and pain with intercourse can be long-term side effects from

radiation. Some centers have physical therapists who specialize in pelvic floor therapy which can help to treat these vaginal symptoms and sometimes improve sexual function. You should ask your physician about this if you are bothered by these problems. You can also find some helpful information in our booklet [Sexuality for the Woman With Cancer](#).

Pelvic radiation can damage the ovaries, resulting in premature menopause. However, this is not an issue for most women who are being treated for endometrial cancer because they have already gone through menopause, either naturally or as a result of surgery to treat the cancer (hysterectomy and removal of the ovaries).

Pelvic radiation therapy can also lead to a blockage of the fluid draining from the leg. This can lead to severe swelling, known as *lymphedema*. Lymphedema is a long-term side effect; it doesn't go away after radiation is stopped. In fact it may not appear for several months after treatment ends. This side effect is more common if pelvic lymph nodes were removed during surgery to remove the cancer. There are specialized physical therapists who can help treat this. It is important to begin treatment early if you develop it. For more on lymphedema, you can read [Understanding Lymphedema – for Cancers Other than Breast Cancer](#).

Radiation to the pelvis can also weaken the bones, leading to fractures of the hips or pelvic bones. It is important that women who have had endometrial cancer contact their doctor right away if they have pelvic pain. Such pain might be caused by a fracture, recurrent cancer, or other serious conditions.

Pelvic radiation can also lead to long-term problems with the bladder (radiation cystitis) or bowel (radiation proctitis). Rarely, radiation damage to the bowel can cause a blockage (called *obstruction*) or for an abnormal connection to form between the bowel and the vagina or outside skin (called a *fistula*). These conditions may need to be treated with surgery.

If you are having side effects from radiation, discuss them with your doctor. There are things you can do to get relief from these symptoms or to prevent them from happening.

Chemotherapy for endometrial cancer

Chemotherapy (often called “chemo”) is the use of cancer-fighting drugs given into a vein or by mouth. These drugs enter the bloodstream and reach throughout the body, making this treatment potentially useful for cancer that has spread beyond the endometrium. If this treatment is chosen, you may receive a combination of drugs. Combination chemotherapy sometimes works better than one drug alone in treating cancer.

Chemo is often given in cycles, in which a period of treatment is followed by a rest period. The chemo drugs may be given on one or more days in each cycle.

Drugs used in treating endometrial cancer may include:

[Paclitaxel \(Taxol®\)](#)

[Carboplatin](#)

[Doxorubicin \(Adriamycin®\)](#) or [liposomal doxorubicin \(Doxil®\)](#)

[Cisplatin](#)

Most often, 2 or more drugs are combined for treatment. The most common combinations include carboplatin with paclitaxel and cisplatin with doxorubicin. Less often, paclitaxel and doxorubicin and cisplatin/paclitaxel/doxorubicin may be used.

For carcinosarcoma, the chemo drug [ifosfamide \(Ifex®\)](#), either alone or in combination with either carboplatin, cisplatin or paclitaxel, is often used. However, the combination of carboplatin and paclitaxel is also often being used for carcinosarcoma.

Sometimes chemo is given for a few cycles, followed by [radiation](#). Then chemo is given again. This is called *sandwich therapy* and is sometimes used for endometrial papillary serous cancer and uterine carcinosarcoma.

Side effects of chemotherapy

These drugs kill cancer cells but can also damage some normal cells, which in turn can cause side effects. Side effects of chemotherapy depend on the specific drugs, the amount taken, and the length of time you are treated. Common side effects include:

[Nausea and vomiting](#)

Loss of appetite

Mouth and vaginal sores

Hair loss

Also, most chemotherapy drugs can damage the blood-producing cells of the bone marrow. This can result in low blood cell counts, such as:

Low white blood cells which increases the risk of [infection](#)

Low platelet counts which can cause bleeding or bruising after minor cuts or injuries

Low red blood cells ([anemia](#)) which can cause problems like [fatigue](#) and shortness of breath

Most of the side effects of chemotherapy stop when the treatment is over, but some can last a long time. Different drugs can cause different side effects. For example, the drug doxorubicin can damage the heart muscle over time. The chance of heart damage goes up as the total dose of the drug goes up, so doctors place a limit on how much doxorubicin is given. Cisplatin can cause kidney damage, so you will be given large amounts of IV fluids before and after chemotherapy to help protect the kidneys. Both cisplatin and paclitaxel can cause nerve damage (called *neuropathy*). This can lead to numbness, tingling, or even pain in the hands and feet. Ifosfamide can injure the lining of the bladder, causing it to bleed (called *hemorrhagic cystitis*). To prevent this, you might be given large amounts of IV fluids and a drug called [mesna](#) along with the chemo. Before starting chemotherapy, be sure to discuss the drugs and their possible side effects with your health care team.

If you have side effects while on chemotherapy, remember that there are ways to prevent or treat many of them. For example, modern anti-nausea drugs can prevent or reduce nausea and vomiting. Be sure to talk with your doctor or nurse about any side effects you are having.

Hormone therapy for endometrial cancer

Hormone therapy is the use of hormones or hormone blocking drugs to fight cancer. This type of hormone therapy is not the same as hormones given to treat the symptoms of menopause (menopausal hormone

therapy).

Progestins

The main hormone treatment for endometrial cancer uses progesterone-like drugs called progestins. The 2 most commonly used progestins are medroxyprogesterone acetate (Provera®, which can be given as an injection or as a pill) and [megestrol acetate](#) (Megace®, which is given as a pill). These drugs work by slowing the growth of endometrial cancer cells. Side effects can include hot flashes, night sweats, and weight gain (from fluid retention and an increased appetite). For women with diabetes, progestins can cause increased blood sugar levels. Rarely, serious blood clots can happen.

Sometimes endometrial hyperplasia and early endometrial cancers can be treated with an intrauterine device that contains levonorgestrel, a progestin. This may be combined with another hormone drug, such as medroxyprogesterone acetate or a gonadotropin-releasing hormone agonist (see below).

Tamoxifen

[Tamoxifen](#), an anti-estrogen drug often used to treat [breast cancer](#), may also be used to treat advanced or recurrent endometrial cancer. The goal of tamoxifen therapy is to prevent any estrogens circulating in the woman's body from stimulating growth of the cancer cells. Even though tamoxifen may prevent estrogen from nourishing the cancer cells, it acts like a weak estrogen in other areas of the body. It does not cause bone loss, but it can cause hot flashes and vaginal dryness. People taking tamoxifen also have an increased risk of serious blood clots in the leg.

Gonadotropin-releasing hormone agonists

Most women with endometrial cancer have had their ovaries removed as a part of treatment. In others, [radiation treatments](#) have made their ovaries inactive. This reduces the production of estrogen and may also slow the growth of the cancer. Gonadotropin-releasing hormone (GNRH) agonists are a way to lower estrogen levels in women who still have functioning ovaries. These drugs switch off estrogen production by the ovaries in women who are premenopausal. Examples of GNRH agonists include [goserelin](#) (Zoladex®) and [leuprolide](#) (Lupron®). These drugs are injected every 1 to 3 months. Side effects can include any of the symptoms of menopause, such as hot flashes and vaginal dryness. If they are taken for

a long time (years), these drugs can weaken bones (sometimes leading to osteoporosis).

Aromatase inhibitors

Even after the ovaries are removed (or are not functioning), estrogen is still made in fat tissue. This becomes the body's main source of estrogen. Drugs called aromatase inhibitors can stop this estrogen from being formed and lower estrogen levels even further. Examples of aromatase inhibitors include [letrozole](#) (Femara®), [anastrozole](#) (Arimidex®), and [exemestane](#) (Aromasin®). These drugs are most often used to treat breast cancer, but may be helpful in the treatment of endometrial cancer. Side effects can include joint and muscle pain as well as hot flashes. If they are taken for a long time (years), these drugs can weaken bones (sometimes leading to osteoporosis). These drugs are still being studied for use in treating endometrial cancer.