Ovarian Cancer Overview

The information that follows is an overview of this type of cancer. It is based on the more detailed information in our document, *Ovarian Cancer*. You can get this document and other information by calling 1-800-227-2345 or visiting us online at www.cancer.org.

What is cancer?

Your body is made up of trillions of living cells. Normal body cells grow, divide into new cells, and die in an orderly way. During the early years of your life, normal cells divide faster to allow you to grow. After you become an adult, most cells divide only to replace worn-out, damaged, or dying cells.

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

Cancer cell growth is different from normal cell growth. Instead of dying, cancer cells keep on growing and form new cancer cells. These cancer cells can grow into (invade) other tissues, something that normal cells cannot do. Being able to grow out of control and invade other tissues makes a cell a cancer cell.

In most cases the cancer cells form a tumor. But some cancers, like leukemia, rarely form tumors. Instead, these cancer cells are in the blood and bone marrow.

When cancer cells get into the bloodstream or lymph vessels, they can travel to other parts of the body. There they begin to grow and form new tumors that replace normal tissue. This process is called *metastasis*.

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

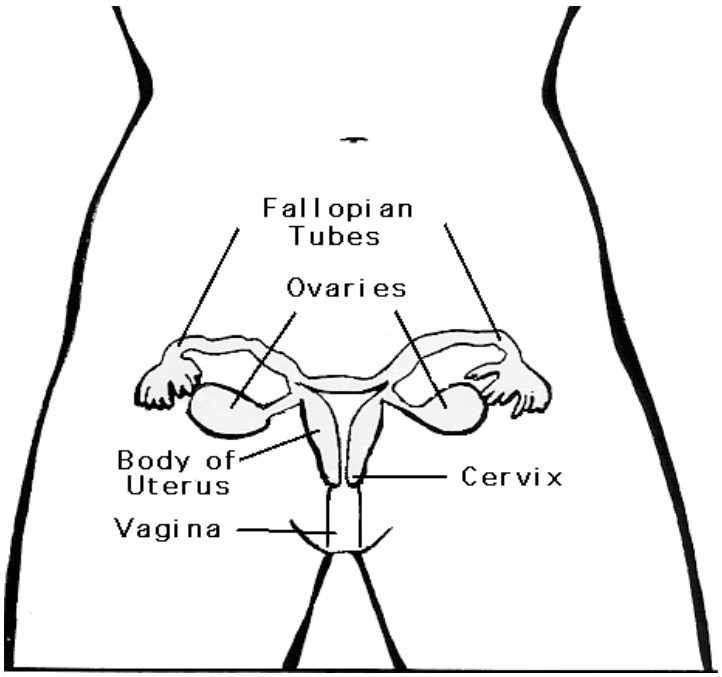
Different types of cancer can behave very differently. For example, lung cancer and breast cancer are very different diseases. They grow at different rates and respond to

different treatments. That is why people with cancer need treatment that is aimed at their own kind of cancer.

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

What is ovarian cancer?

Ovarian cancer begins in the ovaries. Women have 2 ovaries, one on each side of the uterus in the pelvis, as shown in the picture below. The ovaries produce eggs (called *ova*). They are also the main source of a woman's female hormones, estrogen and progesterone. The eggs travel through the fallopian tubes to the uterus. Here they may be fertilized and develop into a fetus.



The ovaries are made of 3 main kinds of tissue:

- Epithelial cells cover the ovary
- Germ cells make eggs (ova) inside of the ovary
- Stromal cells hold the ovary together and make most of the female hormones (estrogen and progesterone)

Types of ovarian tumors

Many types of tumors can start in the ovaries. Some are *benign* (not cancer) and never spread beyond the ovary. Women with these types of tumors can be treated by taking out either the ovary or the part of the ovary that has the tumor. Other types of tumors are *cancerous* (or malignant) and can spread to other parts of the body. They need more treatment which we will explain later.

As a rule, tumors in the ovary are named for the kinds of cells the tumor started from and whether the tumor is benign or cancerous. There are 3 main types of tumors:

Epithelial tumors: These tumors start from the cells that cover the outer surface of the ovary. Most ovarian tumors are epithelial cell tumors.

Germ cell tumors: These start from the cells that produce the eggs.

Stromal tumors: These start from cells that hold the ovary together and make the female hormones.

The information in this document is about the most common kind of ovarian cancer, invasive epithelial ovarian carcinoma. Be sure to ask your doctor what type of ovarian cancer you have. If you need information about ovarian stromal tumors and ovarian germ cell tumors, please see our detailed document, *Ovarian Cancer*.

Epithelial ovarian tumors

Epithelial ovarian tumors are further divided into 3 sub-groups: benign, low malignant potential, and malignant.

Benign epithelial tumors

These tumors are not cancer. They don’t spread and usually do not lead to serious illness.

Tumors of low malignant potential (LMP tumors)

These tumors do not clearly appear to be cancer when looked at under the microscope. They are also known as *borderline epithelial ovarian cancer*. They tend to affect women at a younger age than other ovarian cancers. They grow and spread slowly and are less life-threatening than most ovarian cancers.

Malignant epithelial ovarian tumors

These are the most common ovarian cancer. When someone says they have ovarian cancer, they usually mean this kind. These cancers can also be divided into different types based on certain features that can be seen under a microscope.

How many women get ovarian cancer?

The American Cancer Society's estimates for ovarian cancer in the United States for 2014 are:

- About 21,980 new cases of ovarian cancer
- About 14,270 deaths from ovarian cancer

Ovarian cancer ranks fifth as the cause of cancer death in women. It is more common in white women than African-American women. About half of the women diagnosed with ovarian cancer are 63 years or older.

A woman's risk of getting invasive ovarian cancer in her lifetime is about 1 in 72. Her lifetime chance of dying from invasive ovarian cancer is about 1 in 100. (These statistics don't count low malignant potential ovarian tumors.)

What are the risk factors for ovarian cancer?

A *risk factor* is something that affects a person's chance of getting a disease. Different cancers have different risk factors. Some risk factors, such as smoking, can be changed. Others, like a person's age or race, can't be changed.

But risk factors don't tell us everything. Having a risk factor, or even many risk factors, does not mean that you will get the disease. And many people who get the disease may not have had any known risk factors. Even if a woman with ovarian cancer has a risk factor, it is very hard to know what part that risk factor might have played in the development of the cancer.

Risk factors for ovarian cancer

Age

The risk of ovarian cancer goes up with age. Half of all these cancers are found in women over the age of 63.

Obesity

Obese women (those with a body mass index of at least 30) have a higher risk of developing ovarian cancer.

Pregnancy

Women who have been pregnant and carried the baby full-term have a lower risk of ovarian cancer than women who have not. The risk goes down with each full- term pregnancy. Breastfeeding may lower the risk even further.

Birth control

Women who have used birth control pills have a lower risk of ovarian cancer. The lower risk is seen after only 3 to 6 months of using the pill, and the risk is lower the longer the pills are used. This lower risk goes on for many years after the pill is stopped.

A recent study found that the women who used the contraceptive injection depot medroxyprogesterone acetate (DMPA or Depo-Provera CI®) had a lower risk of ovarian cancer. The risk was even lower if the women had used it for 3 or more years.

Female surgery

Having your “tubes tied” (tubal ligation) may reduce the chance of getting ovarian cancer. Removal of the uterus without removing the ovaries (a hysterectomy) also seems to reduce the risk of getting ovarian cancer.

Fertility drugs

Some studies have found that use of the fertility drug clomiphene citrate (Clomid®) for longer than one year, especially if no pregnancy took place, may increase the risk of low malignant potential tumors. But not having been pregnant also increases the risk, even without the use of fertility drugs. Research in this area is now going on. If you are taking this drug, you should talk to your doctor about the possible risks.

Male hormones

Androgens are male hormones. In some studies, women who took androgens had a higher risk of ovarian cancer. Further studies are planned to look at this.

Estrogen therapy and hormone therapy

Some recent studies suggest women using estrogens after change of life (menopause) have an increased risk of ovarian cancer. The risk seems to be higher in women taking estrogen alone (without progesterone) for many years (at least 5 or 10). The increased risk is less certain for women taking both estrogen and progesterone.

Family history of ovarian cancer, breast cancer, or colorectal cancer

Ovarian cancer can run in families. Your ovarian cancer risk is higher if your mother, sister, or daughter has (or had) ovarian cancer. The risk gets higher the more relatives you have with ovarian cancer. Increased risk for ovarian cancer does not have to come from your mother's side of the family − it also can come from your father's side.

Having a family member with breast cancer can increase your risk of ovarian cancer. And women who have colon cancer in their families may have a higher risk of developing ovarian cancer, too.

Many cases of familial epithelial ovarian cancer are caused by inherited gene mutations that can be identified by genetic testing. Please see the section, "More information about ovarian cancer" to learn about genetic counseling and testing.

Genetic changes and syndromes

Certain inherited gene changes (mutations) can increase the risk of ovarian cancer. These include changes in the *BRCA1* and *BRCA2* genes. If you have inherited a mutation of one of these genes from either parent, your chances of getting breast and/or ovarian cancer increase.

In some cancers, gene mutations may result from radiation or cancer-causing chemicals. But so far, studies haven't been able to link any single chemical in the environment or in our diets to mutations that cause ovarian cancer.

There are also several syndromes that increase the risk of ovarian cancer. A syndrome is a group of signs and symptoms that together point to a certain disorder or disease. The following syndromes increase the risk of ovarian cancer:

- Cowden's disease
- Hereditary nonpolyposis colon cancer (also called *Lynch syndrome*)
- Peutz-Jeghers syndrome
- MUTYH-associated polyposis

Breast cancer

Women who have had breast cancer also have a higher risk of ovarian cancer. The risk is even higher in women who have had breast cancer and also have a family history of breast cancer.

Talcum powder

Some studies have shown a slight increase in ovarian cancer risk among women who used talcum powder on the genital area. Asbestos in the powder may explain the link. But these products have been free of asbestos for more than 20 years. Proving the safety of newer products will mean further studies of women who have used them for many years.

Diet

A study of women who followed a low-fat diet for at least 4 years showed they had a lower risk of ovarian cancer. Some studies have shown a reduced rate of ovarian cancer in women who ate a diet high in vegetables, but other studies disagree.

The American Cancer Society recommends eating at least 2 ½ cups of fruits and vegetables every day, as well as several servings of whole grain foods from plant sources such as breads, cereals, grain products, rice, pasta, or beans. Limit the amount of red meat and processed meats you eat. A healthy diet can help prevent other diseases, too, including some other types of cancer.

Smoking and alcohol use

Smoking is linked to an increased risk for a certain type of ovarian cancer (called *mucinous*), but not other types.

Drinking alcohol is not linked to ovarian cancer risk.

Can ovarian cancer be prevented?

Most women have one or more risk factors for ovarian cancer. But risk factors only partly explain the disease, since most of them increase risk only slightly. So far, what we know about risk factors has not led to ways to prevent the disease.

For women at average risk

Some of the things listed below might reduce the risk of the epithelial ovarian cancer (the most common type) only slightly, while others might decrease it much more. If you are concerned about your risk, especially if you have a family history of cancer, you should talk to your doctor.

Birth control pills

Birth control pills reduce the risk of ovarian cancer, especially among women who use them for 5 years or more. These women have about half the risk of getting ovarian cancer

compared with women who never used the pill. Still, birth control pills do have some serious risks and side effects. Women thinking about taking these pills for any reason should first discuss the pros and cons with their doctor.

Surgery

Getting your “tubes tied” (tubal ligation) or having your uterus removed (hysterectomy) can both lower your chance of getting ovarian cancer. But these operations should only be done for a good medical reason and not just for their effect on ovarian cancer risk.

If you are going to have a hysterectomy for a medical reason and you have a strong family history of ovarian or breast cancer, you might think about having both ovaries and fallopian tubes removed at the same time.

Prevention for women with a family history of ovarian cancer as well as cancer due to gene changes (mutations)

Women with a family history of ovarian (or certain other cancers) might want to think about genetic counseling and maybe genetic testing. Before asking for the test, a woman should discuss the benefits and possible drawbacks with her doctor. Genetic testing can help tell if a woman carries certain gene changes that cause a higher risk of ovarian cancer. Still, the results are not always clear cut, and a genetic counselor can help sort out what the results mean. When a woman learns that she doesn’t have the gene change, it can be a great relief, while finding out that she does can be quite stressful. Still, the information can be helpful in looking at methods to prevent cancer. More details about genetic testing can be found in our document, *Genetic Testing: What You Need to Know*.

Using the birth control pill (oral contraception) is one way that many women can reduce their risk of ovarian cancer. The pill also seems to reduce the risk for women with certain gene changes (known as *BRCA1* and *BRCA2*). But birth control pills can increase breast cancer risk in women without these changes. This increased risk continues for some time after these pills are stopped. Studies that have looked at this issue in women with *BRCA* mutations haven’t agreed about what effect birth control pills have on breast cancer risk. Some studies have shown an increased risk of breast cancer, while some have not. Research is going on to find out more about the risks and benefits of the pill for women at high ovarian and breast cancer risk.

Research shows that taking out both ovaries and fallopian tubes protects women with *BRCA1* or *BRCA2* mutations against ovarian and fallopian tube cancer. This operation lowers ovarian cancer risk a great deal but does not entirely get rid of it. This is because some women who have a high risk of ovarian cancer already have a cancer at the time of surgery. These cancers can be so small that they are only found when the ovaries and fallopian tubes are looked at under the microscope (after they are removed). Also, women who have had their ovaries removed can still get a type of cancer called *primary*

peritoneal carcinoma, but this is rare. As a rule, this surgery is recommended only for very high-risk patients (based on their chance of having a gene mutation) after they are done having children.

Can ovarian cancer be found early?

Finding the cancer early improves the chances that it can be treated with success, but only about 1 in 5 ovarian cancers are found at an early stage. About 9 out of 10 women treated for early ovarian cancer will live longer than 5 years after the cancer is found. It isn't clear how best to find ovarian cancer in its earliest stage.

Screening

Screening tests and exams are used to find a disease such as cancer in people who don't have any symptoms. Women with a very high risk of ovarian cancer (such as those with a strong family history of the disease) may be screened with ultrasound and with a certain blood test. But studies of women at average risk of ovarian cancer show that these tests did not lower the number of deaths caused by ovarian cancer. For this reason, these tests are not used to look for ovarian cancer in women who aren't high risk.

Ways to help find ovarian cancer early

Regular women's health exams

During a pelvic exam the doctor will feel the woman's organs to check their size and shape. But most ovarian tumors are hard to find early because the ovaries are deep within the body and it isn't easy for the doctor to feel them. The Pap test helps to find cervical cancer early, but it is not really useful for finding ovarian cancer early.

See a doctor if you have symptoms

Symptoms of ovarian cancer can include swelling or bloating, pain in the belly, trouble eating, and bladder symptoms (feeling as if you have to go often or always feeling as if you have to go).

These symptoms are most often caused by something besides ovarian cancer. Sometimes when ovarian cancer is the cause, the symptoms are more severe, but that isn't always true. What is most important is that they are a change from how a woman usually feels.

Still, early cancers of the ovaries often cause no symptoms.

How is ovarian cancer found?

Signs and symptoms of ovarian cancer

- Swelling of the stomach (abdomen) or bloating caused by a build-up of fluid or a tumor
- Pelvic or belly (abdominal) pain
- Feeling full quickly or trouble eating
- Having to urinate often or feeling like you have to go right away

Most of these symptoms can also be caused by problems other than cancer. While these symptoms can be more severe when they are caused by ovarian cancer, that isn't always true. What is most important is that they are a change from how a woman usually feels. If you have symptoms that you can't explain nearly every day for more than a few weeks, talk to your doctor right away.

Women are more likely to have symptoms if the disease has spread beyond the ovaries. Also, some types of ovarian cancer can quickly spread to the surface of nearby organs. Still, dealing with symptoms right away can improve the odds of finding the cancer early and treating it with success.

Other symptoms of ovarian cancer can include those listed below. But, again, most of these symptoms are more likely to be caused by something other than ovarian cancer.

- Tiredness
- Upset stomach
- Back pain
- Pain during sex
- Constipation
- Menstrual changes
- Abdominal swelling with weight loss

Physical exam

Your doctor will first ask you some questions and examine you to look for signs of ovarian cancer. These signs include finding an enlarged ovary (on a pelvic exam) and signs of fluid in the abdomen (which is called *ascites*).

Seeing a specialist

If there is any reason to suspect ovarian cancer, the doctor will take steps to find out if the disease is really present. One of the first steps will be for you to meet with a doctor who has special training in treating women with this type of cancer (a *gynecologic oncologist*). Treatment by a gynecologic oncologist helps you get the best kind of surgery for your cancer. And it has been shown to help patients with ovarian cancer live longer. Women who might have ovarian cancer should see this type of doctor before surgery.

These are some of the tests that could be done to find out if you have ovarian cancer or to find out more about the cancer:

Imaging studies

These tests can show if there is a mass in the pelvis, but they cannot tell if it is cancer.

Ultrasound

This is often the first test done to see if there is a problem with the ovaries. This test uses sound waves to make a picture on a video screen. A small probe is placed in the woman's vagina or on the skin over her belly (abdomen). Because tumors and normal tissue reflect sound waves differently, this test may be useful in finding tumors and in telling whether a mass is solid or a fluid-filled cyst.

CT scans (computed tomography)

A CT scan is a type of x-ray that gives a detailed picture of the inside of your body. It takes a series of pictures of the body from many angles. A computer then combines the pictures.

A CT scanner has been described as a large donut, with a narrow table in the middle "hole". You will need to lie still on the table while the scan is being done. CT scans take longer than regular x-rays, and you might feel a bit confined by the ring while the pictures are being taken.

Also, a contrast dye may be put into your vein or you may be asked to drink a contrast fluid. The contrast dye or fluid helps better outline structures in your body. The dye 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 problems like trouble breathing and low blood pressure can happen. Medicine can be given to prevent and treat allergic reactions. But be sure to tell the doctor if you have ever had a reaction to any dye used for x-rays.

CT scans do not show small ovarian tumors well, but they can show larger tumors, and may be able to tell if the tumor is growing into nearby structures. A CT scan may also

find enlarged lymph nodes, signs of cancer spread to liver or other organs, or signs that an ovarian tumor is affecting your kidneys or bladder. CT scans can also be used to guide a needle into a tumor in order to remove a sample of tissue (see *biopsy* under “Other tests" below). This is rarely used to take a sample from an ovarian tumor but is more often used to check out an area of possible cancer spread.

Barium enema x-rays

These can be done to see whether the cancer has spread to the large intestine (colon) or rectum. A chalky substance (called barium sulfate) will be put into the rectum and colon. The barium outlines the colon and rectum on x-rays. But this test is rarely used now in women with ovarian cancer. Colonoscopy (see below) may be done instead.

MRI (magnetic resonance imaging)

Like CT scans, MRIs show a cross-sectional picture of the body. But an MRI uses radio waves and strong magnets instead of x-rays. MRI scans are very helpful in looking at the brain and spinal cord. These scans take longer than CT scans, often up to 30 minutes or more. These are not often used to look for ovarian cancer but may be used to check the brain or spinal cord.

Chest x-rays

X-rays may be taken to see if the cancer has spread to the lungs.

PET (Positron emission tomography)

PET scans use a form of radioactive sugar (glucose) to look for the cancer. Cancer uses sugar at a higher rate than normal tissues. This means that the radioactivity will tend to collect in the cancer, which can be seen on the scan. This test is sometimes useful to find ovarian cancer that has spread. But it is expensive and is not always covered by insurance when it is used to look for ovarian cancer.

Other tests

Laparoscopy

This test lets the doctor take pictures of the ovaries and other pelvic organs. A thin, lighted tube is placed through a small cut (incision) into the lower belly (abdomen). This allows the doctor to see the organs in order to figure out whether the tumor has spread and if so, how far. This can help the doctor plan surgery or other treatments. Also, doctors can use small instruments through the cut to do a biopsy (see below).

Colonoscopy

This test is a way for the doctor to see the inside of the large intestine (colon). After you have taken laxatives to clean out your intestines, the doctor puts a tube into the rectum and into the colon. Through this, the doctor can see inside and spot any cancer. Because it can be uncomfortable, you will be given drugs to make you sleep through the test. This test is most often used to look for colorectal cancer.

Biopsy

The only way to tell for sure if a growth in the pelvis is cancer is by removing a sample of tissue or fluid to see if cancer cells are present. This is called a *biopsy* and is often done at the time of surgery. It can also be done during a laparoscopy or rarely with a needle placed right into the tumor through the skin of the belly (abdomen). The sample is sent to the lab where it is looked at under the microscope.

Blood tests

These tests are done to make sure you have the right number of the different kinds of blood cells. The tests also measure your kidney and liver functions, and look for a protein named CA-125. CA-125 is a protein in the blood that may be higher than normal in some women with ovarian cancer. Other substances in the blood can point to different types of ovarian tumors. These substances are called *tumor markers.*

Staging of ovarian cancer

Staging is the process of finding out how far the cancer has spread (metastasized). This is very important because ovarian cancers at different stages are treated differently. Once a stage has been assigned, it doesn’t change, even if the cancer spreads to other places in the body or comes back later. Staging is usually done during surgery.

One of the goals of surgery for ovarian cancer is to get tissue samples for staging. Samples of tissues are taken from different parts of the pelvis and belly (abdomen) and looked under the microscope.

The AJCC/TNM or FIGO systems can be used to stage the cancer. These systems describe the cancer in terms of the extent of the tumor (T), whether or not it has spread to nearby lymph nodes (N), and whether it has spread to organs farther away − metastasized (M).

Once the TNM groups have been assigned, the information is combined to give a final stage in a number from 1 to 4. The stage is expressed as a Roman numeral. As a rule, the lower the number, the less the cancer has spread. A higher number, such as stage IV (4), means a more advanced cancer.

Summary of ovarian cancer stages

Stage I: The cancer is only in the ovary (or ovaries).

Stage II: Cancer is in one or both ovaries and has spread to other organs in the pelvis such as the bladder, colon, rectum, or uterus. It has not spread to lymph nodes, the lining of the belly (abdomen) or distant places.

Stage III: The cancer is in one or both ovaries and has spread to one or both of the following: the lining of the belly (abdomen) or the lymph nodes.

Stage IV: This is the most advanced stage. The cancer has spread from one or both ovaries to distant organs such as the liver or lungs, or there may be cancer cells in the fluid around the lungs.

Recurrent: This is not a true stage, but is a term used to mean that the cancer has come back (recurred) after treatment.

The above stages can be further divided into sub-groups. Ask your doctor to explain the exact stage of your cancer in terms you can understand.

Survival rates for ovarian cancer

Some people with cancer may want to know the survival rates for their type of cancer. 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. Five-year *relative* survival rates compare the number of people who are still alive 5 years after their cancer was found to the survival of others the same age who don't have cancer. This is a better way to see the impact that cancer can have on survival.

To get 5-year survival rates, doctors look at people who were treated at least 5 years ago. Improvements in treatment since then may result in a better outlook for people now being found with ovarian cancer.

These numbers provide an overall picture, but keep in mind that every person's case is unique and the statistics can't predict exactly what will happen to you. Talk with your cancer care team if you have questions about your own chances of a cure, or how long you might survive your cancer. They know your situation best.

Invasive epithelial ovarian cancer

Stage	Relative 5-year Survival Rate
I	89%
IA	94%
IB	91%
IC	80%
II	66%
IIA	76%
IIB	67%
IIC	57%
III	34%
IIIA	45%
IIIB	39%
IIIC	35%
IV	18%

Ovarian tumors of low malignant potential

Stage	Relative 5-year Survival Rate
I	99%
II	98%
III	96%
IV	77%

How is ovarian cancer treated?

About treatment

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.

After the tests are done, your doctor will suggest one or more choices for treatment. Think about these without feeling rushed. If there is anything you don't understand, ask to have it explained. The choice of treatment depends largely on the type of cancer and the stage of the disease. If you have not had surgery yet, the exact stage may not be known. In that case, treatment is based on what is known.

Other factors that could play a part in choosing the best treatment plan might include your general state of health, whether you plan to have children, and other things that are important to you. Be sure you understand all the risks and side effects of different treatments before you make a decision.

The main treatments for ovarian cancer are:

- Surgery
- Chemotherapy
- Hormone therapy
- Targeted therapy
- Radiation therapy

Often, 2 or more different types of treatments are used.

Surgery for ovarian cancer

Surgery is the main treatment for most ovarian cancers. How much and what type of surgery you have depends on how far the cancer has spread, your health (other than the cancer), and whether or not you still hope to have children. For women of childbearing age who have certain kinds of tumors and whose cancer is in a very early stage, it may be possible to treat the disease without taking out both ovaries and the uterus.

For epithelial ovarian cancer, surgery has 2 main goals: staging and debulking (these are discussed in detail further on). It's important that this surgery be done by someone who's experienced in ovarian cancer surgery. Many gynecologists and surgeons are not trained to do the staging and debulking that are needed in treating ovarian cancer. For this reason, experts recommend that patients see a gynecologic oncologist for surgery.

Staging

Surgery for ovarian cancer has 2 main goals. The first goal is to *stage* the cancer − to see how far the cancer has spread from the ovary. Staging is very important because ovarian cancers at different stages are treated differently. If the staging isn't done right, the doctor might not be able to give the right treatment.

Most often, staging means taking out the uterus, both ovaries, and both fallopian tubes. The *omentum* (a layer of fatty tissue that covers the stomach area like an apron) is also removed. Some lymph nodes in the pelvis and belly (abdomen) are taken out to see if they contain cancer. If there is fluid in the belly (abdominal area), it will also be removed. The surgeon may also remove tissue samples from different places inside the abdomen and pelvis. All the tissue and fluid samples taken during the operation are sent to a lab to be looked at for cancer cells.

Debulking

The other goal of surgery is to remove as much of the tumor as possible. This is called *debulking.* The aim of this surgery is to leave behind no tumors larger than 1 cm. Patients

who have had successful debulking surgery have a better outlook than those left with larger tumors after surgery.

In order to debulk the cancer, the surgeon may need to remove part of the colon, bladder, stomach, liver, and/or pancreas. The spleen and/or gallbladder may also need to be removed.

Sometimes when a piece of colon is removed, the 2 ends that remain can simply be sewn back together. In other cases, though, the ends can't be sewn back together right away. Instead, the top end of the colon is attached to an opening (stoma) in the skin of the belly to allow body wastes to get out. This is known as a *colostomy.* Most often, this is only temporary, and the ends of the colon can be reattached later in another operation. For more information, refer to our document, *Colostomy: A Guide*.

If part of the bladder needs to be removed, a catheter (to empty the bladder) will be placed during surgery. This will be left in place after surgery until the bladder recovers enough to be able to empty on its own. Then, the catheter can be removed.

Most women will stay in the hospital for 3 to 7 days after the operation and can go back to their usual activities in 4 to 6 weeks. Taking out both ovaries and/or the uterus means that you will not be able to become pregnant. It also means that you will go into menopause if you have not done so already.

Chemotherapy for ovarian cancer

Chemotherapy (chemo) is the use of drugs to kill cancer cells or shrink tumors. Most often the drugs are given into a vein (IV) or by mouth. Once the drugs enter the bloodstream, they spread throughout the body. This treatment is especially useful when cancer has spread beyond the ovaries.

The drugs can also be given right into the belly (abdomen). This puts the drugs in contact with the cancer cells yet still allows them to be absorbed to reach the rest of the body. This works well, but does have more severe side effects. This is called *intraperitoneal (IP) chemotherapy*.

Chemo is often a combination 2 or more drugs, given in a cycle every 3- to 4-weeks. A cycle is a schedule where doses of a drug are followed by a rest period. Different drugs have different cycles. Your cancer doctor (oncologist) will prescribe the right cycle for your chemo. Most cancer doctors in the United States believe that using more than one drug works better in treating ovarian cancer than using one drug alone.

Side effects of chemo

While chemo drugs kill cancer cells, they also damage some normal cells, causing side effects. These side effects will depend on the type of drugs given, the amount taken, and how long treatment lasts. Short-term side effects might include the following:

- Nausea and vomiting
- Loss of appetite
- Hair loss
- Hand and foot rashes
- Mouth sores

Chemo can damage the cells of the bone marrow that make blood, so patients may have low blood cell counts. This can result in:

- An increased chance of infection (from a shortage of white blood cells)
- Bleeding or bruising after minor cuts (from a shortage of platelets)
- Tiredness (from low red blood cell counts)

Most side effects go away when treatment ends. Hair will grow back, although it might look different. Some side effects, such as menopause and infertility, can be permanent. Rarely, some cancer drugs may cause another cancer to develop. The small chance that this might happen should be weighed against the positive effects of treating the ovarian cancer. Anyone who has problems with side effects should talk with their doctor or nurse as there are often ways to help. To learn more about chemo and its side effects, please see our document, *Understanding Chemotherapy: A Guide for Patients and Families*. A list of some other documents that you may find helpful can be found in the section called "More information about ovarian cancer."

Targeted therapy for ovarian cancer

Targeted therapy is a newer type of cancer treatment that uses drugs or other substances to find and attack cancer cells while doing little damage to normal cells. Each type of targeted therapy works differently, but all change the way a cancer cell grows, divides, repairs itself, or acts.

The targeted therapy drug that has been studied the most in ovarian cancer is bevacizumab (Avastin®). Bevacizumab isn't yet approved by the US Food and Drug Administration (FDA) to treat ovarian cancer, but it has been approved in the treatment of other cancers. It may be a treatment option in some cases. Studies of other targeted therapy drugs are going on.

Hormone therapy for ovarian cancer

Hormone therapy is the use of hormones or drugs that block hormones to fight cancer. Hormone therapy is rarely used to treat epithelial ovarian cancer. When it is, the drug most often used is tamoxifen.

Radiation therapy for ovarian cancer

Radiation treatment uses high energy x-rays to kill cancer cells or shrink tumors. The radiation may come from outside the body or from radioactive materials placed into or near the tumor. Radiation is only rarely used in this country as the main treatment for ovarian cancer.

Radiation treatment can cause side effects. The skin in the area treated may look and feel sunburned. The skin returns to normal within 6 to 12 months. Many women also feel tiredness, nausea, or diarrhea. Be sure to ask the doctor about any side effects you might have. Often there are ways to help.

More information on radiation therapy can be found in the radiation section of our Web site, or in our document *Understanding Radiation Therapy: A Guide for Patients and Families.*

Approach to treatment of ovarian cancer

The first step in treating most stages of ovarian cancer is surgery to remove and stage the cancer. Debulking is also done as needed. Chemotherapy (chemo) is often given after surgery.

Patients who are too weak to have full staging and debulking surgery are sometimes treated with chemo first. If the chemo works and the patient becomes stronger, surgery to debulk the cancer may be done. This is often followed by more chemo.

After treatment, blood tests will be done to see if your CA-125 tumor marker levels are normal.

For some patients, the doctor will recommend giving more chemo after the first treatment even if the cancer appears to be gone. This is called *maintenance* or *consolidation therapy.* It is aimed at killing any cancer cells that were left behind after treatment but are too small to be found with medical tests. The goal of consolidation therapy is to keep the cancer from coming back after treatment. It is not clear how helpful this treatment is.

If the cancer has spread to distant sites, like the liver, the lungs, or bone, then it can’t be cured with current treatment. But it can still be treated. The goals of treatment are to help patients feel better and live longer. Surgery may be done to remove the tumor and debulk the cancer, followed by chemo. Or chemo may be given first; then, if the tumors shrink

from the chemo, surgery may be done. This is often followed by more chemo. Another option is to limit treatments to those aimed at helping the patient feel better. This type of treatment is called *palliative*, and is discussed in more detail further on.

Treatment for recurrent or persistent ovarian cancer

When ovarian cancer doesn't go away with treatment (persistent ovarian cancer) or comes back (recurrent ovarian cancer), more surgery may be recommended. Most patients are then treated with some form of chemotherapy (chemo). Which chemo drugs are used depends on what was used the first time and how well it worked (how long the cancer stayed away). If the cancer comes back in less than 6 months (or if it never went away at all), different chemo drugs usually will be tried. A clinical trial for new treatments may be an option for women whose cancer has come back or not gone away. Ask your doctor if there is a clinical trial for your type of cancer.

Palliative treatments

Palliative treatments are done to help the patient feel better rather than to try to cure the cancer. The most common problems in women whose cancer has come back are fluid buildup (called *ascites)* and blockage of the intestines (called *obstruction*). Numbing the skin and putting in a needle to draw off the fluid can give relief from ascites. This will often need to be done again from time to time. It often can relieve symptoms at least for a while and, rarely, might even extend life for some women.

Dealing with the blocked intestines can be harder. Sometimes a stent (a stiff tube) can be put into the large intestine to relieve a blockage. Since this option has a high risk of problems, you should discuss the risks and benefits with your doctor first.

In some patients, surgery can be done to relieve intestinal blockage. This is often only offered to patients who are well enough to get additional treatments (like chemo) after surgery. Often the cancer has grown so much that surgery doesn't fix the problem. Doctors can place a tube through the skin and into the stomach to drain off the stomach juices. This can help with pain, nausea, and vomiting.

Clinical trials for ovarian cancer

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

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

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

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

Clinical trials are one way to get state-of-the art cancer treatment. In some cases they may be the only way to get access to newer treatments. They are also the only way for doctors to learn better methods to treat cancer. Still, they are not right for everyone.

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

Complementary and alternative therapies for ovarian cancer

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

What are complementary and alternative therapies?

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

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

Alternative treatments: Alternative treatments may be offered as cancer cures. These treatments have not been proven safe and effective in clinical trials. Some of these methods may be harmful, or have life-threatening side effects. But the biggest danger in most cases is that you may lose the chance to be helped by standard medical treatment.

Delays or interruptions in your medical treatments may give the cancer more time to grow and make it less likely that treatment will help.

Finding out more

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

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

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

The choice is yours

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

Some questions to ask your doctor about ovarian cancer

As you cope with cancer and cancer treatment, you need to have honest, open talks with your doctor. You should feel free to ask any question, no matter how small it might seem. Here are some questions you might want to ask. Be sure to add your own questions as you think of them. Nurses, social workers, and other members of your cancer care team may also be able to answer many of your questions.

- Would you please write down the exact kind of cancer I have?
- Has my cancer spread beyond the ovaries?
- What are the cell type, grade, and stage of my cancer and what does that mean?
- What treatment options are there? What do you recommend? Why?

- What is the goal of this treatment?
- What risks or side effects I should expect?
- Will I be able to have children after my treatment?
- Will I lose my hair?
- What are the chances my cancer will come back with the treatment we have discussed?
- What should I do to be ready for treatment?
- Should I follow a special diet?
- What are my chances of survival?
- What do I tell my children, husband, parents, and other family members?

Add your own questions below:

What happens after treatment for ovarian cancer?

For some people with ovarian cancer, treatment may remove or destroy the cancer. It can feel good to be done with treatment, but it can also be stressful. You may find that you now worry about the cancer coming back. This is a very common concern among those who have had cancer. (When cancer comes back, it is called a *recurrence*.)

It may take a while before your recovery begins to feel real and your fears are somewhat relieved. You can learn more about what to look for and how to learn to live with the chance of cancer coming back in *Living With Uncertainty: The Fear of Cancer Recurrence*.

For other people, the cancer never goes away completely. These women may be treated with chemotherapy (chemo) or other treatments on and off for years. Learning to live with cancer that does not go away can be hard and very stressful. It has its own type of uncertainty. Our document, *When Cancer Doesn't Go Away*, gives more information about this.

Follow-up care

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

Follow-up for ovarian cancer usually includes a careful physical exam and may include blood tests to help spot a return of the cancer. CA-125 levels are often used to follow-up of women with epithelial ovarian cancers. This protein often called a tumor marker, because its level tends to be increased when ovarian cancer is first found and goes down with successful treatment. CA-125 levels often go up again if the cancer comes back.

Still, it isn’t clear that checking for CA-125 levels and starting treatment right away helps women live longer than waiting until they have symptoms. In fact, it could increase side effects of treatment, so it is important to discuss the pros and cons of checking CA-125 levels and quality of life with your doctor.

Other tumor markers, such as CA 19-9, CEA, and HE-4, can be used in patients whose CA-125 levels never went up.

It is also important to keep health insurance. While you hope your cancer won’t come back, it could happen. If it does, you don’t want to have to worry about paying for treatment. Should your cancer come back, our document *When Your Cancer Comes Back: Cancer Recurrence* helps you manage and cope with this phase of your treatment.

Seeing a new doctor

At some point after your cancer is found and treated, you may find yourself seeing a new doctor who doesn't know anything about your cancer. It is important that you be able to give your new doctor the exact details of your diagnosis and treatment. Gathering these details soon after treatment may be easier than trying to get them at some point in the future. Make sure you have this information handy and always keep copies for yourself:

- A copy of your pathology report from any biopsy or surgery
- If you had surgery, a copy of your operative report
- If you were in the hospital, a copy of the discharge summary that the doctor wrote when you were sent home from the hospital
- If you had radiation treatment, a summary of the type and dose of radiation and when and where it was given

- If you had drug therapy (such as chemotherapy, hormone therapy, or targeted therapy), a list of your drugs, drug doses, and when you took them
- Copies of x-rays and imaging tests (these can be put on a DVD)

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

Lifestyle changes after ovarian cancer

Having cancer and dealing with treatment can take a lot of time and energy, but it can also be a time to look at your life in new ways. Maybe you are thinking about how to improve your health over the long term.

Make healthier choices

For many people, finding out they have cancer helps them focus on their health in ways they may not have thought much about in the past. Are there things you could do that might make you healthier? Maybe you could try to eat better or get more exercise. Maybe you could cut down on the alcohol, or give up tobacco. Even things like keeping your stress level under control may help. Now is a good time to think about making changes that can have positive effects for the rest of your life. You will feel better and you will also be healthier.

You can start by working on those things that worry you most. Get help with those that are harder for you. For instance, if you are thinking about quitting smoking and need help, call us at 1-800-227-2345.

Eating better

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

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

One of the best things you can do after cancer treatment is put healthy eating habits into place. You may be surprised at the long-term benefits of some simple changes, like increasing the variety of healthy foods you eat. Getting to and staying at a healthy weight,

eating a healthy diet, and limiting your alcohol intake may lower your risk for a number of types of cancer, as well as having many other health benefits.

Our document, *Nutrition for the Person With Cancer During Treatment: A Guide for Patients and Families* has more information.

Rest, fatigue and exercise

Feeling tired (fatigue) is a very common problem during and after cancer treatment. This is not a normal type of tiredness but a “bone-weary” exhaustion that doesn’t get better with rest. For some people, fatigue lasts a long time after treatment and can keep them from staying active. But exercise can actually help reduce fatigue and the sense of depression that sometimes comes with feeling so tired.

If you are very tired, though, you will need to balance activity with rest. It’s OK to rest when you need to. To learn more about fatigue, please see our documents, *Fatigue in People With Cancer* and *Anemia in People With Cancer*. A list of some other documents that you may find helpful can be found in the “More information about ovarian cancer” section.

If you were very ill or weren’t able to do much during treatment, it is normal that your fitness, staying power, and muscle strength declined. You need to find an exercise plan that fits your own needs. Talk with your health care team before starting. Get their input on your exercise plans. Then try to get an exercise buddy so that you're not doing it alone.

Exercise can improve your physical and emotional health.

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

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

How about your emotional health after ovarian cancer

Once your treatment ends, you may be surprised by the flood of emotions you go through. This happens to a lot of people. You may find that you think about the effect of your cancer on things like your family, friends, and career. Money may be a concern as the medical bills pile up. Or you may begin to think about the changes that cancer has brought to your relationship with your spouse or partner. Unexpected issues may also cause concern − for instance, as you get better and need fewer doctor visits, you will see your health care team less often. This can be hard for some people.

This is a good time to look for emotional and social support. You need people you can turn to. Support can come in many forms: family, friends, cancer support groups, church or spiritual groups, online support communities, or private counselors.

The cancer journey can feel very lonely. You don't need to go it alone. Your friends and family may feel shut out if you decide not include them. Let them in − and let in anyone else who you feel may help. If you aren't sure who can help, call your American Cancer Society at 1-800-227-2345 and we can put you in touch with a group or resource that may work for you.

If treatment for ovarian cancer stops working

When a person has had many different treatments and the cancer has not been cured, over time the cancer tends to resist all treatment. At this time you may have to weigh the possible benefits of a new treatment against the downsides, like treatment side effects and clinic visits.

This is likely to be the hardest time in your battle with cancer − when you have tried everything within reason and it's just not working anymore. Your doctor might offer you new treatment, but you will need to talk about whether the treatment is likely to improve your health or change your outlook for survival.

No matter what you decide to do, it is important for you to feel as good as possible. Make sure you are asking for and getting treatment for pain, nausea, or any other problems you may have. This type of treatment is called *palliative treatment*. It helps relieve symptoms but is not meant to cure the cancer.

At some point you may want to think about hospice care. Most of the time it is given at home. Your cancer may be causing symptoms or problems that need to be treated. Hospice focuses on your comfort. You should know that having hospice care doesn't mean you can't have treatment for the problems caused by your cancer or other health issues. It just means that the purpose of your care is to help you live life as fully as possible and to feel as well as you can.

You can learn more about this in our documents *Hospice Care* and *Nearing the End of Life*. They can be read online, or call us to have free copies mailed to you..

What's new in ovarian cancer research?

Risk factors and causes

The genes involved in familial ovarian cancer ae being studied. Research is looking at how these genes normally work and how changes can lead to cancer. In the future, this research could lead to new drugs to prevent and treat certain types of ovarian cancer.

Learning how genetic and hormonal factors (such as use of “the pill”) are involved may also lead to better ways to prevent ovarian cancer.

Prevention

New knowledge about how much *BRCA1* and *BRCA2* gene changes increase ovarian cancer risk is helping women make decisions about prevention. For instance, there are ways to help estimate how many years of life an average woman with a *BRCA* gene change might gain by having both ovaries and fallopian tubes removed to prevent ovarian cancer from starting. Doctors can predict the average outcome of a group of many women, but they still can’t predict the outcome for any one woman.

Recent studies suggest that many primary peritoneal cancers and some ovarian cancers really start in the fallopian tubes. Cells from these very early fallopian tube cancers can become detached and then stick to the surface of the peritoneum or the ovaries. For reasons that are still not understood, these cancer cells may grow more quickly in their new locations.

If this theory is correct, some experts have suggested that some women with a strong family history and/or *BRCA* gene mutations might think about having just their fallopian tubes removed. They then can have their ovaries removed when they are older. This approach lets women keep their ovaries working longer and perhaps avoid problems from lack of estrogen, such as bone loss, cardiovascular disease, and menopause symptoms. But because this approach might not help breast cancer risk as much. This is an active area of research.

Other studies are testing new drugs to reduce ovarian cancer risk. Researchers are always looking for clues such as lifestyle, diet, and medicines that may alter the risk of ovarian cancer.

Finding ovarian cancer early

Better methods for finding ovarian cancer early could have a great impact on the cure rate. A national “bank” for blood and tissue samples from women with ovarian cancer is being set up. This will allow researchers to look for patterns of blood proteins in women with ovarian cancer. This might help them find new ways to test (screen) for ovarian cancer.

Two large studies of screening tests have been done − one in the United States and the other in the United Kingdom. Both studies looked at using the CA-125 blood test along with ovarian ultrasound to find ovarian cancer. In these studies, more cancers were found in the women who were screened. Some of these were found at an early stage. But the outcomes of the women who were screened were not better than the women who weren’t screened. The screened women did not live longer and were not less likely to die from ovarian cancer.

From time to time, lab companies have marketed unproven tests to look for early ovarian cancer. Because these tests had not yet been shown to help find early cancer, the US Food and Drug Administration (FDA) told the companies to stop selling them. So far, this happened with 2 different tests: OvaSure and OvaCheck. Both were taken off the market at the request of the FDA.

Diagnosis

A test called OVA1 is meant to be used in women who have an ovarian tumor. It measures the levels of certain proteins in the blood. The levels of these proteins, when looked at together, are used to assign women with tumors into 2 groups: low risk and high risk. The women labeled low risk are not likely to have cancer. The women who are called high risk are more likely to have a cancer and so should have surgery done by an expert (a gynecologic oncologist). This test is NOT a screening test - it is only meant for use in women who have an ovarian tumor.

Treatment

Research into treatment includes testing methods now in use as well as finding new treatments.

Chemotherapy

New chemotherapy (chemo) drugs and drug combinations which may help treat cancers that resist current treatments are always being studied. Studies are also looking at using targeted therapy drugs to fight ovarian cancer.

Another approach is to give intraperitoneal chemotherapy (IP) chemo during surgery using heated drugs. While it can be effective, it is very toxic. It still needs to be studied and compared with standard IP chemo to see if it really works better.

Targeted therapy

Targeted therapy is a newer type of cancer treatment that uses drugs or other substances to find and attack cancer cells while doing little damage to normal cells. Each type of targeted drug works differently, but they all attack the cancer cells' inner workings. Bevacizumab (Avastin) is the targeted drug that has been studied best in ovarian cancer, but other drugs are also being looked at, as well.

Pazopanib (Votrient®) is a targeted therapy drug that, like bevacizumab, helps stop new blood vessels from forming. It has shown some promise in studies.

Enzymes have been found that act to control cell survival and cell death. Drugs that work against these enzymes help fight cancers caused by mutations in *BRCA1* and *BRCA2*. These drugs may make cancers in women without BRCA mutations respond better to radiation treatment and some kinds of chemo. Clinical trials are in going on to find out whether these drugs will improve outcomes for ovarian cancers in women without *BRCA* mutations.

Immunotherapy

Other treatments are being studied. One approach is to make tumor vaccines that program the immune system to better spot cancer cells. Also, monoclonal antibodies that find and attack ovarian cancer cells are being developed. Monoclonal antibodies are like the antibodies our bodies make to fight infection. But these are made in the lab and are aimed at the cancer cells. Farletuzumab is a monoclonal antibody that is aimed at a protein on the surface of ovarian cancer cells. It has shown promise in treating ovarian cancer in early studies. Another monoclonal antibody being studied in ovarian cancer is called catumaxomab. When it is given into the belly (abdominal cavity), it can help treat fluid buildup (ascites) that can happen when cancer is present.

More information about ovarian cancer

From your American Cancer Society

Here is more information you might find helpful. You also can order free copies of our documents from our toll-free number, 1-800-227-2345, or read them on our Web site, www.cancer.org.

Dealing with diagnosis and treatment

Health Professionals Associated With Cancer Care

Talking With Your Doctor (also in Spanish)

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

Nutrition for the Person With Cancer During Treatment: A Guide for Patients and Families (also in Spanish)

Coping With Cancer in Everyday Life (also in Spanish)

Family and caregiver concerns

Talking With Friends and Relatives About Your Cancer (also in Spanish)

Helping Children When A Family Member Has Cancer: Dealing With Diagnosis (also in Spanish)

What It Takes to Be a Caregiver

Insurance and financial issues

Financial Guidance for Cancer Survivors and Their Families: In Treatment (also in Spanish)

Health Insurance and Financial Assistance for the Cancer Patient (also in Spanish)

More on cancer treatments

Understanding Cancer Surgery: A Guide for Patients and Families (also in Spanish)

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

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

Targeted Therapy

Imaging (Radiology) Tests

Clinical Trials: What You Need to Know

Cancer treatment side effects

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

Distress in People With Cancer

Anxiety, Fear, and Depression

Nausea and Vomiting

Pain Control: A Guide for People With Cancer and Their Families (also in Spanish)

Get Relief From Cancer Pain

Pain Diary

Anemia in People With Cancer

Fatigue in People With Cancer

Sexuality for the Woman With Cancer

Your American Cancer Society also has books that you might find helpful. Call us at 1-800-227-2345 or visit our bookstore online at cancer.org/bookstore to find out about costs or to place an order.

National organizations and Web sites*

In addition to the American Cancer Society (1-800-227-2345), other sources of patient information and support include:

Foundation for Women's Cancer (formerly Gynecologic Cancer Foundation)
Toll-free number: 1-800-444-4441
Web site: www.foundationforwomenscancer.org

> Has a directory of trained gynecologic oncologists practicing in the US; free information; and an online "survivor section" featuring articles on personal issues such as fertility, sexuality and quality of life aimed at creating an online community for women with cancer.

Gilda Radner Familial Ovarian Cancer Registry
Toll-free number: 1-800-OVARIAN (1-800-682-7426)
Web site: www.ovariancancer.com

> Offers literature on ovarian cancer, referrals to available support groups nationwide, a hotline staffed by cancer information specialists, and an online version of the Gilda Radner Familial Ovarian Cancer Registry Newsletter

National Cancer Institute
Toll-free number: 1-800-422-6237 (1-800-4-CANCER)
TYY: 1-800-332-8615
Web site: www.cancer.gov

Their Cancer Information Service offers free, accurate, up-to-date information about cancer to patients, their families, and the general public; also can help people find clinical trials in their area.

National Ovarian Cancer Coalition
Toll-free number: 1-888-682-7426 (1-888-OVARIAN)
Web site: www.ovarian.org

Services include: Information and materials on ovarian cancer (many available in Spanish); events throughout the country promoting awareness and education; the NOCC, a quarterly newsletter; clinical trial information and access; and a free Newly Diagnosed Patient Kit with a resource guide, book of survivor stories, personal journal, stories of Hope DVD and more

womenshealth.gov
Toll-free number: 1-800-994-9662 (1-800-994-WOMAN)
TTY: 1-888-220-5446
Web site: www.womenshealth.gov

Offers a lot of information on women's health issues − including cancers in women

Ovarian Cancer National Alliance
Telephone number: 1-866-399-6262
Web site: www.ovariancancer.org

This survivor-led group offers information specific to survivors, newly diagnosed patients, family, and friends; public education and awareness programs; Fact Sheets covering ovarian cancer, treatment, and other related issues; quarterly e-newsletters; treatment and clinical trials information; and their online store, Shop Teal, with items such as wristbands, awareness ribbons, *etc*.

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

No matter who you are, we can help. Contact us anytime, day or night, for information and support. Call us at 1-800-227-2345 or visit www.cancer.org.

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Last Revised: 2/6/2014

For additional assistance please contact your American Cancer Society
1-800-227-2345 or www.cancer.org