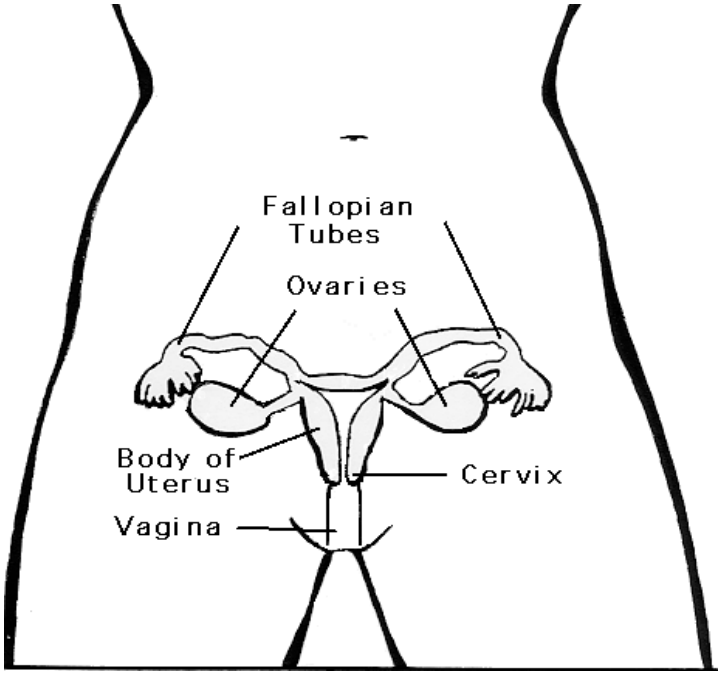
Ovarian Cancer Overview

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*.

What is ovarian cancer?

Cancer starts when cells in the body begin to grow out of control. Cells in nearly any part of the body can become cancer, and can spread to other areas of the body. To learn more about how cancers start and spread, see *What Is 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.



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 estrogen and progesterone.

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.

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 low malignant potential tumors, ovarian stromal tumors, or ovarian germ cell tumors, please see our detailed document, *Ovarian Cancer*.

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.

Factors linked to an increase in ovarian cancer risk include:

- Increasing age
- Obesity after menopause
- Family history of ovarian cancer – having relatives with ovarian cancer increases your risk of getting it, too

- Family history of breast or colorectal cancer – some family cancer syndromes that can cause these cancers can also increase the risk of ovarian cancer
- Certain family cancer (genetic) syndromes – the most common is hereditary breast and ovarian cancer syndrome, which is caused by abnormal changes (mutations) in the genes *BRCA1* and *BRCA2*.
- Breast cancer - women who have had breast cancer also have a higher risk of ovarian cancer.

Factors linked to a lower risk of ovarian cancer include:

- Pregnancy
- Breastfeeding
- Birth control pills
- The contraceptive injection depot medroxyprogesterone acetate (DMPA or Depo-Provera CI®)
- Having your "tubes tied" (tubal ligation)
- Removal of the uterus without removing the ovaries (a hysterectomy)
- Low-fat diet

For more detailed information about how these risk factors affect ovarian cancer risk, see the section about risk factors in our document *Ovarian Cancer*.

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

If you are at average risk of ovarian cancer, you may be able to lower your risk if you use birth control pills, get your "tubes tied' (a tubal ligation), or have your uterus removed. Still, all of these have risks and side effects, and so generally shouldn't be used just to lower the risk of ovarian cancer in women who are not high risk.

For women at high risk due to certain gene changes (mutations)

Women with a family history of ovarian (or certain other cancers) might want to find out if they have a family cancer syndrome that could increase the risk of ovarian cancer. This is done by first talking with a genetics professional about their personal and family history. If the genetics professional finds that the woman has a high risk of having a family cancer syndrome, genetic testing can be done to look for the mutations that cause the syndrome. Someone who has a mutation can then take steps to lower the chance of getting ovarian cancer. Some of the things that women who have one of the mutations can do to lower the risk of ovarian cancer include taking birth control pills and having their ovaries and fallopian tubes removed.

More information about how these options affect cancer risk can be found in our document *Ovarian Cancer*.

More details about genetic testing can be found in our document, *Genetic Testing: What You Need to Know*.

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.

The best way to find ovarian cancer is to have regular women's health exams and to see the doctor if you have symptoms.

What about screening for ovarian cancer?

Screening tests and exams are used to find a disease such as cancer in people who don't have any symptoms. So far, no screening tests have been shown to lower the risk of dying from ovarian cancer, and so no tests are recommended.

Sometimes women with a very high risk of ovarian cancer because they have a gene change (mutation) that increases their risk are screened with ultrasound and with a certain blood test. But even for these women, the tests have not been shown to help lower deaths caused by ovarian cancer.

Signs and symptoms of ovarian cancer

Early cancer of the ovary often causes no symptoms. Even when symptoms occur, they are more often caused by other things. Look for symptoms that are different from how you usually feel and that continue instead of going away.

The most common symptoms are:

- 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 as if you have to go right away

Other symptoms can include:

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

If you have any of these problems, talk to your doctor so that the cause can be found.

How is ovarian cancer found?

If you are having symptoms that could be caused by ovarian cancer, you should see your doctor. Your doctor will ask questions and examine you and may also order some tests. If ovarian cancer is suspected, you should be referred to a *gynecologic oncologist.* This is a doctor that specializes in treating cancers of the female reproductive system, including cancer of the ovaries.

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 tests

These tests can show if there is a mass (tumor) 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 if 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 also can be used to guide a needle into a tumor 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 used more often to check out an area of possible cancer spread.

Chest x-rays

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

PET (Positron emission tomography) scans

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 finding 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.

Blood tests

If ovarian cancer is suspected, the doctor may check your blood to see if it has high levels of certain proteins called *tumor markers*. Levels of these proteins can go up if cancer is present. Still, tumor marker levels can't tell for certain if you have cancer – you can have a normal level and still have cancer, and a high level can be caused by things besides cancer. The most common tumor marker used for ovarian cancer is CA-125.

Your doctor may also check to make sure you have the right number of the different kinds of blood cells. Blood tests are also often done to check your kidney and liver functions,.

Biopsy

The only way to tell for sure that something is cancer is by removing a sample of tissue to see if cancer cells are present. This is called a *biopsy.* For many kinds of cancer, this is done before surgery to remove the tumor. For ovarian cancer, though, this could spread the cancer, and so the biopsy is usually done during surgery to remove the cancer.

If you have fluid built up in the abdomen (called *ascites*), the doctor can remove it and check it for cancer cells before surgery (this doesn't spread the cancer).

For women who are too sick to have a big operation, a biopsy can be done during an operation that uses a laparoscope (see below) or rarely with a needle placed right into the tumor through the skin of the belly (abdomen).

Other tests

Laparoscopy

This test lets the doctor take pictures of the ovaries and other pelvic organs. A thin, lighted tube (a laparoscope) is placed through a small cut (incision) into the lower belly (abdomen). This lets the doctor see organs in order to figure out if 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.

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.

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.

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.

Ovarian cancer is staged most often with the FIGO system. This system describes 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).

The actual stage is expressed as a Roman numeral from 1 (I) to 4 (IV), with many stages divided into substages indicated by additional letters and numbers. 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.

How is ovarian cancer treated?

About treatment

After the tests are done, your doctor will suggest one or more treatment choices. 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
- Targeted therapy
- Radiation therapy

Some early cancers may be treated with surgery alone, but most patients are treated with surgery and chemotherapy. Patients with advanced cancers may be treated with chemotherapy without surgery.

Thinking about taking part in a clinical trial

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

If you would like to learn more about clinical trials that might be right for you, start by asking your doctor if your clinic or hospital conducts clinical trials. You can also call our clinical trials matching service at 1-800-303-5691 for a list of studies that meet your medical needs, or see *Clinical Trials* to learn more.

Considering complementary and alternative methods

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

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

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

Help getting through cancer treatment

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

The American Cancer Society also has programs and services – including rides to treatment, lodging, support groups, and more – to help you get through treatment. Call our National Cancer Information Center at 1-800-227-2345 and speak with one of our trained specialists on call 24 hours a day, every day.

The treatment information given here is not official policy of the American Cancer 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.

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.

Surgery for epithelial ovarian cancer has 2 main goals: finding out how far the cancer has spread (staging) and removing as much of the cancer as possible (debulking). Because only gynecologic oncologists are trained to do these, it’s important that surgery for ovarian cancer be done by this specialist and not a regular gynecologist or general surgeon. If the cancer isn’t staged and debulked properly the first time, you might have to have a second surgery.

The most common operation for ovarian cancer includes removing 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 and checked for cancer cells.

If the cancer has spread to the tissue inside the abdomen and pelvis, the surgeon will remove as much of it as possible. The goal of this surgery is to leave behind no tumors larger than 1 cm. If this surgery is successful, the patient is considered *optimally debulked*. This is important because patients who have had optimal debulking surgery have a better outlook than those left with larger tumors after surgery.

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. This leads to more side effects.

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.

For more information about surgery for ovarian cancer, including possible side effects, see our *Ovarian Cancer*.

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 of 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 grows 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.

For more details about the chemo used for ovarian cancer, see *Ovarian Cancer*.

To learn more about chemo and its side effects, please see Chemotherapy on our website

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.

Bevacizumab (Avastin®) is a targeted drug that helps block the formation of new blood vessels. It can be combined with chemotherapy to treat advanced ovarian cancer.

Olaparib (Lynparza™) helps kill cells by affecting DNA repair. Because of the way it works, it is only an option for women who have abnormal changes (mutations) in either *BRCA1* or *BRCA2*.

For more information about the use of these drugs for ovarian cancer, see the more detailed information in out document *Ovarian Cancer*.

Studies of other targeted therapy drugs that could be used for ovarian cancer are going on now.

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 rarely, if ever, used in the United States as the main treatment for ovarian cancer. It is sometimes used to treat areas of cancer spread.

Radiation treatment can have side effects.

- Skin changes, where the skin in the area treated often turns red and becomes sore. It may even blister and peel.
- Tiredness
- Nausea

- Diarrhea

These improve after radiation is stopped. 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 website, or in our document *Understanding Radiation Therapy: A Guide for Patients and Families.*

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 the cancer spread beyond my ovaries?
- What are the cell type, grade, and stage of my cancer and what does that mean?
- What are my treatment options? What do you recommend? Why?
- What is the goal of this treatment?
- What risks or side effects I should expect from the treatment?
- 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 have and might 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.

It is also important to keep your 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 activity 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.

Physical activity 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 are 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 finding 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.

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 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.

To learn more about ovarian cancer

From your American Cancer Society

We have a lot more information that you might find helpful. Explore www.cancer.org or call our National Cancer Information Center toll-free number, 1-800-227-2345. We're here to help you any time, day or night.

Other organizations and websites*

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
Website: 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)
Website: 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
Website: 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)
Website: 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
Website: 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
Website: 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.*

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