

# Ovarian Cancer

*Treatment Guidelines for Patients*

*Version III/ April 2007*





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The mutual goal of the National Comprehensive Cancer Network (NCCN) and the American Cancer Society (ACS) partnership is to provide patients and the general public with state-of-the-art cancer treatment information in language that is easy to understand. This information, based on the NCCN's Clinical Practice Guidelines, is intended to help you talk with your doctor about your treatment. These guidelines do not replace the expertise and clinical judgment of your doctor.

The NCCN Clinical Practice Guidelines were developed for health professionals by a diverse panel of experts. The guidelines are a statement of consensus of its authors regarding the scientific evidence and their views of currently accepted approaches to treatment. The NCCN guidelines are updated as new significant data become available. The Patient Information versions are updated accordingly and are made available on-line through the American Cancer Society and NCCN web sites. To ensure you have the most recent version, you may contact the American Cancer Society at 1-800-ACS-2345 or the NCCN at 1-888-909-NCCN.

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## Introduction

This report was written to give patients information about the way ovarian cancer is treated at leading cancer centers in the United States. Originally developed for cancer specialists by the National Comprehensive Cancer Network (NCCN), these treatment guidelines have now been written in an easier to understand version for the general public by the American Cancer Society (ACS). To obtain another copy of these guidelines, as well as more information, call the American Cancer Society at 1-800-ACS-2345 or the NCCN at 1-888-909-NCCN, or visit these organizations' Web sites at [www.cancer.org](http://www.cancer.org) (ACS) and [www.nccn.org](http://www.nccn.org) (NCCN).

Since 1995, doctors have looked to the NCCN for advice on treating cancer. The NCCN Clinical Practice Guidelines were developed by a diverse panel of experts from 21 of the nation's leading cancer centers.

For more than 90 years, the public has relied on the American Cancer Society for information about cancer. The Society's books, brochures, and web pages provide comprehensive, current, and understandable information to hundreds of thousands of patients, their families, and friends. This collaboration between the NCCN and ACS provides an authoritative and understandable source of cancer treatment information for the general public.

These patient guidelines will help you to better understand your cancer and your treatment options. We urge you to discuss these guidelines with your doctor. After reading these guidelines, you may want to ask your doctor the following questions:

- What is the stage of my cancer?
- Was all the cancer removed by surgery?
- What is my cancer's grade (how abnormal do the cells look)?
- How does the stage and grade of my cancer affect my chances for cure?
- What are my treatment options?
- What are the risks or side effects associated with each of my treatment options and how will they affect my quality of life?
- What should I do to be ready for treatment, reduce side effects, and hasten my recovery?
- When will I be able to return to my normal activities?
- Are there any clinical trials that I should consider?

## Making Decisions About Ovarian Cancer Treatment

Ovarian cancer is the fifth most common cancer among women, excluding non-melanoma skin cancers. The American Cancer Society estimates that about 22,430 new cases of ovarian cancer will be diagnosed in the United States in 2007. The good news is that the number of new cases diagnosed each year has been slowly decreasing since 1989.

Ovarian cancer ranks fifth in cancer deaths among women, accounting for more deaths than any other cancer of the female reproductive system. It is estimated that there will be about 15,280 deaths from ovarian cancer in the United States during 2007.

Many types of tumors can start growing in the ovaries. Some are *benign* (non-cancerous)

and never spread beyond the ovary. Patients with these types of tumors can be treated successfully by removing one ovary or the part of the ovary that contains the tumor. Other types of ovarian tumors are *malignant* (cancerous) and may spread to other parts of the body (metastasize). Their treatment is more complex and is discussed later in this report.

In general, ovarian tumors are named for the kind of cells the tumor started from and whether the tumor is benign or cancerous. There are three main types of ovarian tumors:

- *Epithelial ovarian tumors* start from the cells that cover the outer surface of the ovary.
- *Germ cell tumors* start from the cells that produce the ova (eggs).
- *Stromal ovarian tumors* start from connective tissue cells that hold the ovary together and produce the female hormones *estrogen* and *progesterone*.

The information in this document refers only to epithelial tumors, because these are the most common kind of ovarian cancer, particularly in adults.

Although ovarian cancer is a serious disease, it can be treated. Many women with ovarian cancer can be cured. It is important that you receive care from a team of health care professionals who are experienced in treating ovarian cancer. This team may include a gynecologist, *gynecologic oncologist*, surgeon, medical oncologist, radiation oncologist, pathologist, oncology nurse, radiologist, and social worker often along with your primary care doctor. This report is intended to help you understand your options for treatment of ovarian cancer so that you and your cancer

care team can work together to identify which choice best meets your medical and personal needs.

This report contains flowcharts that doctors call “decision trees.” These charts show different stages of ovarian cancer, and each chart provides information about different choices (options) that will need to be made about your treatment. Your doctor and health care team, family, and friends can help you make these decisions. Some options are recommended more frequently, because more doctors believe they are better choices.

To make informed decisions, you will need to understand some of the medical terms your doctors use. You may already know a lot about ovarian cancer, or perhaps you are just beginning to learn. This report contains background information on ovarian cancer and explanations of ovarian cancer stages, diagnosis, and treatment. Many of the medical terms are explained in the text and are used in the flowcharts. Words in italics are also defined in the glossary at the end of this report.

## About the Ovaries

Ovarian cancer is cancer that begins in the ovaries. One ovary is located on each side of a woman’s *uterus* in the *pelvis*. The ovaries are connected to the uterus by the *fallopian tubes*, which are the tubes through which the eggs travel to be fertilized in the uterus (womb).

The ovaries contain three kinds of tissue. Ovaries contain *germ cells* that produce eggs (*ova*) that are formed on the inside of the ovary. Each month from puberty until menopause, women normally produce an egg that makes

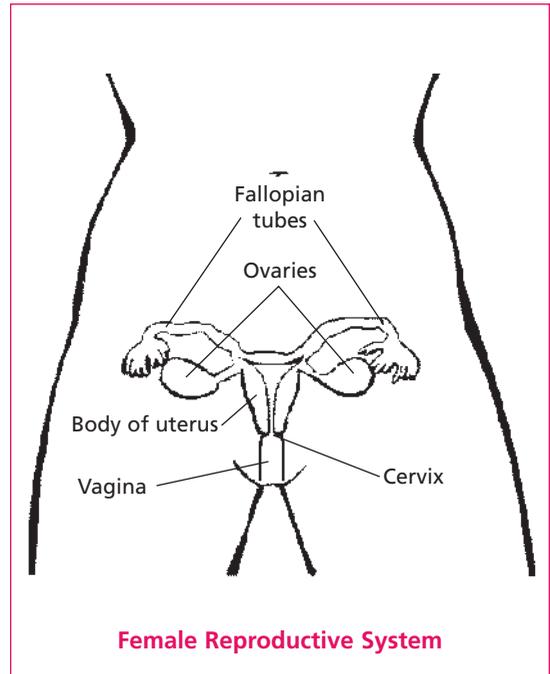
its way to the ovary's surface, where it is shed into the fallopian tube. The ovaries also contain cells, called *stromal cells*, which produce most of the female hormones, estrogen and progesterone. A layer of tissue called *epithelium* covers the ovary. Most ovarian cancers start in this epithelial covering.

Because ovarian epithelial cancers start in cells on the surface of the ovary, they tend to spread throughout the pelvis and *abdomen*, even when the tumor is small. Cancer cells break off from the tumor surface and circulate through the abdominal cavity, where they can implant and begin growing. They can circulate as far up as the underside of the *diaphragm*, the muscle that separates the lungs from the abdomen. They also can spread to the *omentum*, an apron of fatty tissue that covers the intestines.

Because the ovary is richly supplied with *lymphatic vessels*, the cancer cells also tend to migrate into the *lymph nodes* that cluster around the *aorta*. Lymph nodes are small bean-shaped collections of immune cells that fight infection. The aorta is a large blood vessel that runs along the back of the abdomen. Lymphatic vessels are similar to veins except they are thinner and more delicate, and they carry clear lymph fluid.

## Types of Ovarian Cancer

There are several types of ovarian cancer, but this report discusses only *epithelial ovarian tumors*. If you need information about the less common types of ovarian cancer, please contact the American Cancer Society.



### **Benign epithelial ovarian tumors**

Most epithelial ovarian tumors are benign, do not spread, and usually do not lead to serious illness. There are several types of benign epithelial tumors, including serous adenomas, mucinous adenomas, and Brenner tumors.

### **Borderline epithelial ovarian cancers**

When viewed under the microscope, some ovarian epithelial tumors do not clearly appear to be cancerous. These are called tumors of *low malignant potential* (LMP tumors). They are also known as *borderline epithelial ovarian cancers*. These tumors differ from typical ovarian cancers, because they do not invade the ovarian stroma (the supporting tissue of the ovary). Likewise, if they spread outside the ovary (for example, into the abdominal cavity), they do not usually grow into the lining of the abdomen.

These cancers affect women at a younger age than the typical epithelial ovarian cancers. LMP tumors grow slowly and are also a less life-threatening disease than most ovarian cancers. Because of this, LMP tumors are treated differently, and a separate treatment pathway is presented in this report.

### **Epithelial ovarian cancers**

Cancerous epithelial tumors are called *carcinomas*. About 85% to 90% of ovarian cancers are epithelial ovarian carcinomas. Epithelial ovarian carcinoma cells have several features that can be seen under the microscope. These features are used to classify epithelial ovarian carcinomas into serous, mucinous, endometrioid, and clear cell types. *Undifferentiated* epithelial ovarian carcinomas don't look like any of these 4 subtypes, and they also tend to grow and spread more quickly. Although all of these cancers may grow differently, they are all treated the same way.

Along with their classification by cell type, epithelial ovarian carcinomas are also given a *grade* and a *stage*. The tumor stage describes how far the tumor has spread from where it started in the ovary. The staging system is described in the *staging* section of this report.

## **Tests and Exams to Diagnose Ovarian Cancer**

Because there is no good screening test for ovarian cancer, it is most often suspected in women who have symptoms. If there is a reason to suspect that you may have ovarian cancer, the doctor will use one or more methods to find out if the disease is really present.

If these tests find ovarian cancer, more tests will be done to find out how far the cancer has spread.

### **History and Physical Exam**

When your doctor “takes a history,” you are asked a series of questions about your symptoms and risk factors. Ovarian cancer may cause several signs and symptoms. However, most of these may also be caused by *benign* (non-cancerous) diseases and by cancers of other organs.

- Back pain (most common, but can be caused by many other conditions)
- Prolonged swelling of the abdomen (due to a tumor or buildup of fluid called *ascites*)
- Digestive problems including gas, loss of appetite, bloating, long-term abdominal pain and cramping, or indigestion
- Unusual vaginal bleeding (although rarely a sign of ovarian cancer, it is a strong warning of some type of abnormality. Bleeding that occurs between periods, is heavier, or lasts longer than usual is considered abnormal. Any *postmenopausal* bleeding, staining, or persistent vaginal discharge is abnormal. A woman of any age who has unusual vaginal bleeding should tell her doctor right away.)
- Pelvic pressure (feeling as though you have to urinate or defecate all the time)
- Pelvic pain, which may be caused by ovarian cancer, other cancers, or by several benign conditions
- Leg pain

If ovarian cancer is suspected, your doctor will use one or more methods to be absolutely certain that the disease is present and to find out the stage of the cancer.

## Consultation With a Specialist

If your pelvic exam or other tests suggest that you may have ovarian cancer, you will need to see a doctor or surgeon who specializes in treating women with this type of cancer. A *gynecologic oncologist* is a doctor who is specially trained in treating cancers of the female reproductive system.

## Blood Tests

Certain blood tests are useful in evaluating ovarian cancer. The simplest test is a *complete blood count (CBC)*. This tests for *anemia*, which is caused by too few red blood cells. It also looks at whether you are producing normal numbers of infection-fighting white blood cells and platelets (a part of the blood that helps prevent bleeding). Other tests are general *blood chemistry* tests, which tell about your liver and kidney function and your blood mineral balance.

Your doctor will also obtain a blood CA-125 test, a substance that is higher in the blood of many women with ovarian cancer. It is often very high when the cancer is advanced. After treatment, CA-125 will return to normal levels if the cancer goes into *remission* or if the cancer is completely removed by surgery.

## Imaging Studies

Imaging methods such as *computed tomography (CT)* scans, *magnetic resonance imaging (MRI)* scans, and ultrasound studies can confirm

whether a pelvic mass is present. Although these studies cannot confirm if the mass is a cancer, they are useful if your doctor is looking for spread of ovarian cancer to other tissues and organs.

## Ultrasound

An ultrasound uses sound waves to create an image on a video screen. Sound waves are released from a small probe placed in the woman's vagina or on the surface of her abdomen. The sound waves create echoes as they enter the ovaries and other organs. The same probe detects the echoes that bounce back, and a computer translates the pattern of echoes into a picture. Because ovarian tumors and normal ovarian tissue often reflect sound waves differently, this test may be used to detect tumors and find out whether a mass is solid or a fluid-filled *cyst*.

## Computed tomography (CT)

The CT scan is an x-ray procedure that produces detailed cross-sectional images of your body. Instead of taking one picture like the usual x-ray, a CT scanner takes many pictures as it rotates around you. A computer then combines these pictures into an image of a slice of your body. The machine produces multiple images of the part of your body that is being studied. The CT scan provides precise information about the size, shape, and position of a tumor. It can also help find enlarged lymph nodes that might contain cancer that has spread from the ovary. Although large lymph nodes seen in CT scans of a person with ovarian cancer usually contain cancer cells, they may sometimes be enlarged for other reasons.

You may receive an intravenous injection (injection into your vein) of a *contrast agent*, or dye, which helps better outline structures in your body. Some people are allergic to the dye and get hives or, rarely, have more serious allergic reactions like trouble breathing and low blood pressure. Be sure to tell the doctor if you have ever had a reaction to any contrast material used for x-rays.

CT scans can also be used during a *biopsy* to precisely guide a biopsy needle into a suspected tumor. For this procedure, called a CT-guided needle biopsy, the patient remains on the CT scanning table, while a radiologist advances a biopsy needle toward the location of the mass. CT scans are repeated until the doctors are confident that the needle is within the mass. Either a fine needle biopsy sample (tiny fragment of tissue) or a core needle biopsy sample (a thin cylinder of tissue about ½-inch long and less than ⅛-inch in diameter) is removed and looked at under a microscope.

### **Magnetic resonance imaging (MRI)**

MRI scans use radio waves and strong magnets instead of x-rays. The energy from the radio waves is absorbed and then released in a pattern formed by the type of tissue and by certain diseases. A computer translates the pattern of radio waves given off by the tissues into very detailed cross-sectional images of parts of the body. A contrast material might be injected just as with CT scans.

### **PET scan**

PET scans use a form of radioactive sugar (glucose) to look for the cancer. A small amount of this material is injected into a vein. Then you are put into the PET machine where

a special camera can detect the radioactivity. Because of their high rate of metabolism, cancer cells of the body absorb large amounts of the radioactive sugar and appear brighter than normal tissue. However, some non-cancerous conditions, such as inflammation, can also appear bright on the scan.

### **Chest x-ray**

This procedure may be done to find out whether ovarian cancer has spread (metastasized) to the lungs. This spread may cause tumors to appear in the lungs and often causes fluid to collect around the lungs. This fluid, called a *pleural effusion*, can be seen with chest x-rays.

### **Barium enema x-ray**

This is a test to see if the cancer has spread to your colon (*large intestine*) or *rectum*. After taking laxatives the day before, the radiology technician puts barium sulfate, a chalky substance, into your rectum and colon. Because x-rays cannot go through barium, x-rays of your abdomen show outlines of your colon and rectum. This type of x-ray is also used to look for colorectal cancer.

### **Colonoscopy**

A *colonoscopy* is also done after you have cleaned out your large intestine with laxatives. A doctor inserts a fiberoptic tube into your rectum and passes it through your entire colon. This imaging test allows the doctor to see the inside of your colon and to detect any cancer there. Because colonoscopy is uncomfortable, you are sedated (put into a sleep) during this test. Colonoscopy is also used to look for colorectal cancer.

## Other Tests

### Laparoscopy

This procedure uses a thin, lighted tube through which a doctor can look at the ovaries and other pelvic organs, and tissue in the area around the bile duct. The tube is inserted through a small incision (cut) in the lower abdomen. *Laparoscopy* provides a view of organs that can help in planning surgery or other treatments and can help doctors confirm the *stage* (how far the tumor has spread) of the cancer. Also, doctors can put small instruments through the laparoscopic incision(s) to remove small tissue samples to look at under the microscope.

### Tissue sampling (biopsy)

The only way to be certain whether a growth in the pelvic region is cancer is to remove a sample of tissue from the suspicious area and look at it under a microscope. This procedure is called a biopsy.

The samples are examined by a *pathologist*, a doctor who specializes in laboratory tests to diagnose diseases such as cancer. If you have any questions about your pathology results or any other aspect of the diagnostic process, do not hesitate to ask your doctor. You can get a second opinion of your specimens, called a pathology review, by having microscope slides containing thin slices of your cancer specimen sent to a consulting pathologist at an NCCN center or other laboratory recommended by your doctor.

Although in many cancers a biopsy is often done before surgery, in women with ovarian cancer, the cancer sampling generally occurs at the time of surgery. Not only is the entire ovary removed for examination, but

the surgeon also removes any other visible cancer that can be removed and performs other biopsies. Ovarian cancer tends to “seed” (spread) throughout the abdomen and to the surface of other organs, such as the liver. Often the surgeon can’t tell whether seeding has occurred unless these biopsies are done, because the “seeds” can be very small. The surgeon will try to find out if or how extensively the cancer has seeded by removing small amounts of normal-looking tissue (biopsies) from many sites in the abdomen. The pathologist then examines these biopsies under the microscope. This is part of the process of finding out the stage of the ovarian cancer. Sometimes, in patients with ascites (fluid that has collected inside the abdomen), samples of fluid can also be used to diagnose the cancer.

## Ovarian Cancer Stages

*Staging* is the process of finding out how far a cancer has spread. Most ovarian cancers that are not obviously widespread are staged at the time of surgery. Although your doctor may try to estimate the stage of your cancer from the exam and imaging tests, this estimate (called the *clinical stage*) is not always accurate. The *pathologic stage*, which is assessed during and after surgery, is much more accurate.

During surgery, samples of tissues are taken from different parts of the pelvis and abdomen and looked at under the microscope. Staging is very important, because ovarian cancers are treated differently depending on stage. Each stage also has a different outlook (prognosis) for cure and survival. If the

cancer is not properly staged, cancer that has spread outside the ovary may be missed and not treated. Once a stage has been assigned, it does not change, even if the cancer comes back or spreads to new locations in the body. The cancer is also assigned a grade, which describes how abnormal the individual cells look under the microscope. The stage and grade of the tumor are required for choosing the best treatment options.

Ask your cancer care team to explain the staging that will be done. Also ask them if they will be able to perform a thorough staging procedure. After surgery, ask about the stage of your cancer so that you can take part in making informed decisions about your treatment. The stages described below are pathologic stages. They are developed from the pathologist's report of the findings from your surgery.

## What the Stages of Ovarian Cancer Mean

Ovarian cancer is staged using the AJCC and FIGO system. AJCC stands for "American Joint Committee on Cancer," and FIGO stands for "International Federation of Gynecologists and Obstetricians."

### Stage I

The cancer is still contained within the ovary (or ovaries).

**Stage IA:** Cancer has developed in one ovary and has not spread onto the outer surface of the ovary. Cancer cells were not found in washings from the abdomen and pelvis when the fluids were looked at under a microscope.

**Stage IB:** Cancer has developed within both ovaries and has not spread onto their outer surfaces. Cancer cells were not found in washings from the abdomen and pelvis when the fluids were looked at under a microscope.

**Stage IC:** The cancer is present in one or both ovaries, and one or more of the following are present:

- Cancer is found on the outer surface of at least one of the ovaries.
- In the case of *cystic* (fluid-filled) tumors, the *capsule* (outer wall of the tumor) has ruptured (opened).
- Cancer cells are found in fluid or washings from the abdomen when the fluids are looked at under a microscope.

### Stage II

The cancer is in one or both ovaries and has grown onto or into other organs in the pelvis (such as the uterus, fallopian tubes, bladder, *sigmoid colon*, or rectum).

**Stage IIA:** The cancer has spread onto or has grown into the uterus or the fallopian tubes, or both. Cancer cells are not found when washings from the abdomen are looked at under a microscope.

**Stage IIB:** The cancer has spread onto or grown into other nearby pelvic organs, such as the bladder, sigmoid colon, or rectum. Cancer cells are not found when washings from the abdomen are looked at under a microscope.

**Stage IIC:** The cancer has spread onto or grown into pelvic organs as in stages IIA or IIB, and cancer cells were found in fluid or washings from the abdomen.

### Stage III

The cancer involves one or both ovaries, and one or both of the following are present:

- Cancer has spread beyond the pelvis to the lining of the abdomen.
- Cancer has spread to lymph nodes.

**Stage IIIA:** During the staging operation, the surgeon can see cancer in the ovary or ovaries but no other sites of disease outside the ovaries are visible. However, when biopsies (tissue samples) are checked under a microscope, tiny deposits of cancer are found in the lining of the abdomen. The cancer has not spread to lymph nodes.

**Stage IIIB:** There is cancer in one or both ovaries, and deposits of cancer large enough for the surgeon to see but smaller than 2 cm (about  $\frac{3}{4}$ -inch) across are present in the abdomen. Cancer has not spread to the lymph nodes.

**Stage IIIC:** The cancer is in one or both ovaries, and one or both of the following are present:

- Cancer has spread to lymph nodes.
- Deposits of cancer larger than 2 cm (about  $\frac{3}{4}$ -inch) across are seen in the abdomen.

### Stage IV

This is the most advanced stage of ovarian cancer. The cancer has spread to distant sites such as the inside of the liver (if it is only on the outside, the cancer can still be stage III), the lungs, or to other organs located outside of the pelvis or abdomen. Finding ovarian cancer cells in pleural fluid (from around the lungs) is also evidence of stage IV disease.

### Grade

The grade is on a scale of 1, 2, or 3 and is based on how the cells look under the microscope. Grade 1 epithelial ovarian carcinomas look more like normal tissue and grow more slowly. Patients with grade 1 carcinomas tend to have a better *prognosis* (which means that these patients usually live longer). Grade 3 epithelial ovarian carcinomas look less like normal tissue, are more aggressive, and usually have a worse outlook.

### Recurrent ovarian cancer

This means that the disease has recurred (come back) after treatment was completed.

## Types of Treatment for Ovarian Cancer

After the diagnostic tests are done, your cancer care team will recommend one or more treatment options. Carefully consider your options without feeling rushed. If you do not understand something, ask to have it explained. The choice of treatment depends largely on the type of cancer as well as the stage and grade of the disease. In patients who did not have surgery as their first treatment, the exact stage may not be known. Treatment is then based on other information.

Other factors that can play a part in choosing the best treatment plan may include your general state of health, whether you plan to have children, and other personal factors. Age alone is not a reason to avoid treatment, because several studies have shown that older women tolerate ovarian cancer treatments

well. Be sure you understand all the risks and side effects of the various therapies before making a decision about treatment.

The main treatments for ovarian cancer are surgery and *chemotherapy*. Hormonal therapy and immunologic therapy are also occasionally used. In some cases, two or even all of these treatments are recommended. Radiation therapy is sometimes used to treat pain in patients with advanced disease.

## Surgery

Staging and removal of the ovarian cancer are special procedures that require the expertise of a gynecologic surgical oncologist who is trained in these procedures.

How much surgery you have depends on how far your cancer has spread and on your general health. For women of childbearing age who have certain kinds of tumors and whose cancer is in the early stage, the surgeon may be able to avoid removing both ovaries and the uterus.

Usually, the surgeon makes a vertical incision in the abdomen. Many surgeries on women's pelvic organs can be done with a *laparoscope*. This means operating through small incisions and looking at the organs using a thin lighted tube. Laparoscopy is not usually done for ovarian cancer. But it may be done in some women with stage I cancers.

Several surgical procedures are used to treat ovarian cancer. The main procedure is to remove both ovaries and fallopian tubes (called a bilateral *salpingo-oophorectomy*) as well as the uterus (called a *hysterectomy*). Sometimes, in younger women who wish to become pregnant and whose cancer is in an

early stage, only the affected ovary may be removed. Another structure that is usually removed is the *omentum*, a layer of fatty tissue that covers the abdominal contents like an apron. Finally the surgeon will often remove *lymph nodes* in the pelvis and abdomen to see if they contain cancer spread from the ovary (also called lymph node biopsy or dissection).

The other important surgical procedure is *debulking (cytoreduction)* in women who have cancer spread widely throughout their abdomen. Debulking means the surgeon removes as much tumor as possible, even though all of it can't be removed. Most doctors believe this greatly improves a patient's prognosis (that is, improves survival).

It is important that your surgeon is experienced in ovarian cancer surgery. Many general gynecologists are not prepared to do the appropriate cancer operation, which requires careful staging and, perhaps, debulking. Ask your doctor if he or she is experienced in treating ovarian cancer, can stage your cancer properly, and can perform a debulking procedure if that is needed. Otherwise you may need a second operation if debulking is required.

Most women remain in the hospital for 3 to 7 days after the operation and can resume their usual activities within 4 to 6 weeks.

After removal of both ovaries and/or the uterus, you cannot become pregnant. You will also go into menopause if you have not done so already. Surgery does not take away your ability to feel sexual pleasure. You do not need your uterus to reach orgasm. Some women feel less feminine after a hysterectomy; however, generally sexual function (including ability to have an orgasm) returns after a while.

## Chemotherapy

Systemic chemotherapy uses cancer drugs that are injected into a vein (IV) or given by mouth. These drugs enter the bloodstream and reach all areas of the body, making this treatment useful for cancers that have spread beyond the organ they started in.

For *intraperitoneal chemotherapy* a thin tube or *catheter* is placed through the skin into the abdomen and the drugs are injected directly into the abdomen. The tube can be placed during or after surgery. It will usually be connected to a “port,” which is a disk covered with a rubber-like top. The drugs can then be injected through this port. This approach concentrates the dose of chemotherapy reaching the cancer cells on the abdominal lining (or peritoneum). Still, the chemotherapy drugs get into the bloodstream from the abdomen and can cause the same side effects as if they were given in the vein (IV). The port can also become blocked or infected because it is left in place for several months. Abdominal pain and bowel damage can sometimes result from intraperitoneal chemotherapy. Some women cannot take chemotherapy by this route and must get it IV.

Chemotherapy drugs kill cancer cells but also damage some normal cells. Therefore, careful attention must be given to avoiding or minimizing side effects, which depend on the type of drugs, the amount taken, and the length of treatment.

Temporary side effects might include nausea and vomiting, loss of appetite, loss of hair, hand and foot rashes, and mouth sores. Some of the drugs used in ovarian cancer treatment can cause kidney and nerve damage. Because chemotherapy can damage the

blood-producing cells of the bone marrow, patients may have low blood cell counts. This can result in:

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

Most side effects disappear once treatment is stopped. Hair will grow back after treatment ends, although it may look different. There are remedies for many of the temporary side effects of chemotherapy. For example, *anti-emetic drugs* can be given to prevent or reduce nausea and vomiting.

For more information on these side effects, please view the *Nausea and Vomiting Treatment Guidelines for Patients with Cancer* and *Cancer-Related Fatigue and Anemia Treatment Guidelines for Patients* at the NCCN website ([www.nccn.org](http://www.nccn.org)), or contact the ACS or NCCN for copies of these guidelines.

Women receiving all kinds of chemotherapy often have less desire for sex than usual. The physical side effects leave little energy for relationships. Sexual desire often returns when a woman feels better.

Some chemotherapy drugs may rarely cause acute myeloid *leukemia*, a life-threatening cancer of white blood cells. This is called a secondary malignancy. Your health care team knows which drugs can cause this problem, and they should discuss this possibility with you. The positive effects of these drugs against ovarian cancer usually offset the small chance that any of these drugs will cause leukemia.

The typical course of chemotherapy for epithelial ovarian cancer involves 6 cycles. A *chemotherapy cycle* is a schedule that allows regular doses of a drug, followed by a rest period. Different drugs have varying cycles. Your *oncologist* (cancer doctor) will prescribe the particular cycle or schedule for your chemotherapy.

These drugs are usually given intravenously (IV) in a 3- to 4-week cycle. If chemotherapy treatment is chosen, you will probably receive a combination of drugs. Most oncologists in the United States believe that combination chemotherapy is more effective in treating ovarian cancer than one drug alone. Most chemotherapy for ovarian cancer uses a combination of carboplatin (a platinum drug) and a taxane (either paclitaxel or docetaxel).

Although epithelial ovarian cancer tends to respond to chemotherapy, some cancer cells may survive the chemotherapy and may begin to grow again. This is called recurrence. It is sometimes treated with more cycles of carboplatin and a taxane. In other cases, recurrence is treated with different agents such as altretamine, etoposide, gemcitabine, liposomal doxorubicin, topotecan, or vinorelbine. Usually, these are given alone, rather than in combination with other drugs.

### **Hormonal and Immunologic Therapy**

The drug tamoxifen, normally used for treating breast cancer, can sometimes cause ovarian cancers to shrink. It is a pill that blocks estrogen (the major female hormone). Its main side effects may be increased hot flashes. Letrozole, anastrozole, and exemestane are other types of *hormonal therapy* commonly used in breast

cancer that may be used to treat some stages of ovarian cancer.

Antibodies are produced by the immune system to help fight infections. Similar antibodies called monoclonal antibodies can be made in the laboratory. Instead of attacking germs like the body's antibodies usually do, monoclonal antibodies can be designed to attack cancer cells. Researchers are working to develop monoclonal antibodies that will attack ovarian cancer cells.

Bevacizumab is a monoclonal antibody that works by helping to stop the growth of new blood vessels that supply tumor cells with the oxygen and other nutrients they need to grow. Bevacizumab is a type of immunologic therapy that is sometimes used for recurrent ovarian cancer.

### **Radiation Therapy**

Although in the past it was often used, radiation therapy is now seldom used in this country as the main treatment for ovarian cancer. However, radiation therapy is used to decrease symptoms (such as pain) in patients with advanced cancer (see next section on "Palliative and Supportive Care"). Radiation therapy uses high-energy x-rays to kill cancer cells. Radiation from a machine outside the body is focused on the cancer. *External beam radiation therapy* is one type of radiation therapy used to help relieve symptoms of ovarian cancer. Each treatment lasts only a few minutes and is similar to having a diagnostic x-ray test. As with a diagnostic x-ray, the radiation passes through the skin and other tissues before it reaches the tumor and after it passes through it. The actual radiation exposure is very short, and most of the time is spent precisely

positioning the patient so that the radiation is aimed accurately at the cancer or area of cancer spread.

During the course of radiation therapy, skin in the treated area may look and feel sunburned. This gradually fades, returning to a normal appearance in 6 to 12 months. Because the abdomen and pelvis are sensitive to radiation, many women also notice tiredness, nausea, or diarrhea. If you are having side effects from radiation, discuss them with your cancer care team. There may be things you can do to obtain relief, such as taking drugs to help the nausea or diarrhea.

## Palliative and Supportive Care

Most of this report discusses ways to cure or treat women with ovarian cancer and to help others live longer by removing or destroying ovarian cancer cells. However, another important goal is to maintain the quality of your life. Don't hesitate to discuss your symptoms or how you are feeling with your cancer care team. There are effective and safe ways to treat pain, most other symptoms of ovarian cancer, and most of the side effects caused by ovarian cancer treatments.

*Palliative* treatments are intended to reduce or prevent symptoms but not to treat or cure the cancer. Palliative care may include radiation or chemotherapy treatments that relieve symptoms by shrinking the tumor.

Sometimes, the cancer returns and does not respond to new treatment. Or, the cancer may respond and then come back again. At some point, you may have to make a choice between receiving only comfort measures and further treatment. At other times, comfort measures may be your only option. It is

important that you and your doctor discuss what can be done to control symptoms.

Ovarian cancer often causes fluid to collect in your abdomen, chest cavity, or both. The fluid can cause discomfort because of the pressure in your abdomen or on your lungs. Your doctor can remove the fluid by putting a needle in your abdomen (*paracentesis*) or chest (*thoracentesis*) to remove the fluid. These are not painful procedures and can provide you with a great deal of comfort. Sometimes the cancer can block your *ureters* (the tubes that drain urine from your kidney). This blockage will be fatal unless a *stent* (a firm tube) is threaded into the ureters to reopen them.

Because ovarian cancer can grow into or press onto the intestine, it can cause intestinal blockage. In this situation, no food (digested or undigested) can pass through your intestine. Eating will cause a great deal of pain, because the part of the intestine above the blockage is stretched to hold the food. This blockage can sometimes be relieved by surgery, but often it cannot. In this situation, you may choose to stop eating and even drinking, which will lead to your death unless you are fed some other way. Sometimes doctors can place a tube into your intestinal tract with a small incision that gets around the blockage, and liquid nourishment can be given to you through this tube. Other times, your doctors can place a catheter (a thin, flexible tube through which fluids can be given) in a large vein in your chest under the collarbone (clavicle) and give you some nutrition intravenously. Both of these methods may allow you to live a little bit longer. Should this time come, you will need to decide if this is what you want to do.

Pain can also be a symptom if the cancer's growth cannot be controlled. A major obstacle to good pain control is not telling your doctor (or cancer care team) that you have pain. You must tell your doctor if you have pain and whether any *analgesic* (pain medicine) being prescribed is working. Pain medicine is very effective when used properly and monitored carefully. It can be given by mouth, a patch on the skin, intravenously (IV), or by continuous injection under the skin. Tell your doctor if you have pain that needs to be relieved. For most patients, treatment with morphine or other so-called *opioids* (medicines related to opium) can reduce the pain considerably. For more information on the treatment of cancer pain, please refer to the online *Cancer Pain Treatment Guidelines for Patients* at the NCCN website ([www.nccn.org](http://www.nccn.org)), or contact the ACS or NCCN to request a printed copy.

## Complementary and Alternative Therapies

*Complementary and alternative therapies* are a diverse group of health care practices, systems, and products that are not part of usual medical treatment. They may include products such as vitamins, herbs, or dietary supplements, or procedures such as acupuncture, massage, and a host of other types of treatment. There is a great deal of interest today in complementary and alternative treatments for cancer. Many are now being studied to find out if they are truly helpful to people with cancer.

You may hear about different treatments from family, friends, and others, which may be offered as a way to treat your cancer or to help you feel better. Some of these treatments are harmless in certain situations, while others

have been shown to cause harm. Most of them are of unproven benefit.

The American Cancer Society defines *complementary* medicine or methods as those that are used along with your regular medical care. If these treatments are carefully managed, they may add to your comfort and well-being.

*Alternative* medicines are defined as those that are used instead of your regular medical care. Some of them have been proven not to be useful or even to be harmful, but are still promoted as “cures.” If you choose to use these alternatives, they may reduce your chance of fighting your cancer by delaying, replacing, or interfering with regular cancer treatment.

Before changing your treatment or adding any of these methods, discuss this openly with your doctor or nurse. Some methods can be safely used along with standard medical treatment. Others, however, can interfere with standard treatment or cause serious side effects. That is why it's important to talk with your doctor. More information about specific complementary and alternative therapies used for cancer is available from the American Cancer Society.

## About Clinical Trials

### The Purpose of Clinical Trials

Studies of promising new or experimental treatments in patients are known as *clinical trials*. A clinical trial is only done when there is reason to believe that the treatment being studied may be valuable to the patient. Treatments used in clinical trials are often found to have real benefits and the new method becomes the standard treatment.

Researchers conduct studies of new treatments to answer the following questions:

- Is the treatment helpful?
- How does this new type of treatment work?
- Does it work better than other treatments already available?
- What side effects does the treatment cause?
- Are the side effects greater or less than the standard treatment?
- Do the benefits outweigh the side effects?
- In which patients is the treatment most likely to be helpful?

## Types of Clinical Trials

Clinical trials can focus on new uses of existing treatments, or they may involve studies of new drugs that have not yet been approved by the US Food and Drug Administration (FDA). New treatments are studied in 3 phases to learn about side effects and how well they work.

### *Phase I clinical trials*

The purpose of a phase I study is to find the best way to give a new treatment and how much of it can be given safely. The cancer team watches patients carefully for any harmful side effects. The treatment has been well tested in lab and animal studies, but the side effects in patients are not completely known. Doctors conducting the clinical trial start by giving very low doses of a drug to the first patients and increasing the dose for later groups of patients until side effects appear. Although doctors are hoping to help patients, the main purpose of a phase I study is to test the safety of the drug or treatment.

### *Phase II clinical trials*

These studies are designed to see if the drug or treatment works. Patients are given the highest dose that doesn't cause severe side effects (determined from the phase I study), and patients are closely observed to learn whether the drug affects the cancer or symptoms. The doctors also look for side effects.

### *Phase III clinical trials:*

Phase III studies involve large numbers of patients—often several hundred. One group (the control group) receives the standard (most accepted) treatment. The other group receives the new treatment. All patients in phase III studies are closely watched. The study will be stopped if the side effects of the new treatment are too severe or if one group has much better results than the others.

If you are in a clinical trial, you will have a team of experts taking care of you and monitoring your progress very carefully.

However, there are some risks. No one involved in the study knows in advance whether the treatment will work or exactly what side effects will occur. That is what the study is designed to find out. While most side effects disappear in time, some can be permanent or even life threatening. Keep in mind, though, even standard treatments have side effects. Depending on many factors, you may decide to enroll in a clinical trial.

## Deciding to Enter a Clinical Trial

Enrollment in a clinical trial is completely up to you. Your doctors and nurses will explain the study to you in detail and will give you a form to read and sign indicating your desire to take part. This process is known as giving

your *informed consent*. Even after signing the form and after the clinical trial begins, you are free to leave the study at any time, for any reason. Taking part in the study will not prevent you from getting other medical care you may need.

To find out more about clinical trials, talk to your cancer care team. Among the questions you should ask are:

- Is there a clinical trial for which I would be eligible?
- What is the purpose of the study?
- What kinds of tests and treatments does the study involve?
- What does this treatment do?
- Will I know which treatment I receive?
- What is likely to happen in my case with, or without, this new research treatment?
- What are my other choices and their advantages and disadvantages?
- How could the study affect my daily life?
- What side effects can I expect from the study? Can the side effects be controlled?
- Will I have to be hospitalized? If so, how often and for how long?
- Will the study cost me anything? Will any of the treatment be free?
- If I am harmed as a result of the research, what treatment would I be entitled to?
- What type of long-term follow-up care is part of the study?
- Has the treatment been used to treat other types of cancers?

The American Cancer Society offers a clinical trials matching service for patients, their family, and friends. You can reach this service at 1-800-303-5691 or on our Web site

at <http://clinicaltrials.cancer.org>. Based on the information you provide about your cancer type, stage, and previous treatments, this service can compile a list of clinical trials that match your medical needs. In finding a center most convenient for you, the service can also take into account where you live and whether you are willing to travel.

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 or by visiting the NCI clinical trials Web site at [www.cancer.gov/clinical\\_trials/](http://www.cancer.gov/clinical_trials/).

## Other Things to Consider During and After Treatment

During and after treatment, you may be able to speed up your recovery and improve your quality of life by taking an active role. Learn about the benefits and drawbacks of each of your treatment options, and talk to your cancer care team if there is anything you do not understand. Learn about and look out for side effects of treatment, and report these promptly to your cancer care team so that they can take steps to help you minimize them and shorten their duration.

Remember that your body is as unique as your personality and your fingerprints. Although understanding your cancer's stage and learning about the effectiveness of your treatment options can help predict what health problems you may face, no one can say precisely how you will respond to cancer or its treatment.

You may have special strengths such as a habit of excellent nutrition and physical activity, a strong family support system, or a deep faith, and these strengths may make a difference in how you cope with your cancer. There are also experienced professionals in mental health services, social work services, and pastoral services who may help you in coping with your illness.

You can also help in your own recovery from cancer by making healthy lifestyle choices. If you use tobacco, stop now. Quitting will improve your overall health, and the full return of the sense of smell may help you enjoy a healthy diet during recovery. If you use alcohol, limit how much you drink. Have no more than 1 or 2 drinks per day. Good nutrition can help you get better after treatment. Eat a nutritious and balanced diet, with plenty of fruits, vegetables, and whole grain foods. Ask your cancer care team if you could benefit from a special diet or a referral to a dietician (a nutrition expert.) Your cancer team may have special recommendations for people who have had chemotherapy or surgery.

If you are in treatment for cancer, be aware of the battle that is going on in your body. Chemotherapy adds to the fatigue caused by the disease itself. Get enough sleep and rest, and ask your doctor or cancer care team about a regular exercise program. Exercise can actually help reduce fatigue. Studies have shown that patients who follow an exercise program tailored to their personal needs feel better physically and emotionally.

Surgery and chemotherapy can sometimes affect your feelings about your body and may lead to specific physical problems that affect

sexuality. Talk to your cancer care team about these issues and contact the American Cancer Society for a copy of *Sexuality and Cancer: For the Woman with Cancer and Her Partner*.

A cancer diagnosis and its treatment are major life challenges, because cancer affects you and everyone who cares for you. Almost everyone who has been through cancer can benefit from getting some type of support. What's best for you depends on your situation and personality. Some people feel safe in peer-support groups or education groups. Others would rather talk in an informal setting, such as church. Others may feel more at ease talking one-on-one with a trusted friend or counselor. Whatever your source of strength or comfort, make sure you have a place to go with your concerns. If you need help with this, contact your hospital's social service department or the American Cancer Society for help in finding counselors or other services.

## Follow-Up Care

After your treatment is over, it is very important to keep all follow-up appointments. During these visits, your doctors will ask about symptoms, do physical exams, and order blood tests or imaging studies such as CT scans or x-rays. Follow-up is needed to check for cancer recurrence or spread, as well as possible side effects of certain treatments. This is the time for you to ask your health care team any questions you need answered and to discuss any concerns you might have. Be sure to tell your doctor about any new or ongoing symptoms right away, because you may need to quickly schedule an appointment so your doctor can assess these symptoms.



# Treatment Guidelines

## Decision Trees

The decision trees (flowcharts) on the following pages show treatment options for ovarian cancer based on the type of cancer (epithelial ovarian cancer and borderline epithelial ovarian cancer), how far it has spread (its stage), and how abnormal the cells look (its grade.) Each one shows you step-by-step how you and your doctor can arrive at the choices you need to make about your treatment. Some options are recommended more frequently, because there is more evidence in their favor. It is important to know that there are sometimes other treatment options that your doctor may suggest.

Keep in mind, this information is not meant to be used without the expertise of your own doctor, who is familiar with your situation, medical history, and personal preferences. You may even want to review this booklet together with your doctor, who can show you which of the decision trees apply to you. We've left some blank spaces in the decision tree section for you or your doctor to add notes about the treatments. You might also use this space to write down some questions to ask your cancer treatment team.

Taking part in a clinical trial is an option for patients with any stage of ovarian cancer. Taking part in a study does not prevent you from getting other medical care you may need.

The NCCN guidelines are updated as new significant data become available. To ensure you have the most recent version, consult the web sites of the ACS ([www.cancer.org](http://www.cancer.org)) or NCCN ([www.nccn.org](http://www.nccn.org)). You may also call the NCCN at 1-888-909-NCCN or the ACS at 1-800-ACS-2345 for the most recent information on these guidelines or on cancer in general.

## Initial Work-up (Evaluation)

Mass and/or fluid in abdomen or pelvis likely caused by ovarian cancer or other symptoms that may be caused by ovarian cancer

- Chest x-ray to check whether cancer has spread to lungs
- Blood tests to check blood counts, liver function, and CA-125
- Imaging studies of abdomen and pelvis (such as ultrasound or CT scan) if needed
- Barium enema or colonoscopy to check the colon and rectum if needed
- Consider genetic counseling if:
  - patient has also had breast cancer
  - ovarian or breast cancer in family, especially male breast cancer
  - several types of cancer on same side of family

Ovarian cancer diagnosed by surgery

- Chest x-ray to check whether cancer has spread to lungs
- Blood tests to check blood counts, liver function, and CA-125
- Imaging studies of abdomen and pelvis (such as ultrasound or CT scan) if clinically indicated
- Biopsy review by second pathologist
- Consider genetic counseling if:
  - patient has also had breast cancer
  - ovarian or breast cancer in family, especially male breast cancer
  - Several types of cancer on same side of family

## Epithelial Ovarian Cancer

### *Evaluation and treatment for women with epithelial ovarian cancer*

This decision tree begins when you have a mass in your pelvis that is probably arising from your ovary, fluid in your pelvis or abdomen, or other symptoms (for example, pelvic pressure, back pain). Your doctor then does a series of examinations and tests called

the initial workup. If surgery hasn't been done, the history and physical exam may suggest that you might have ovarian cancer. You will then have several tests to find out whether the cancer has spread outside the ovary.

The chest x-ray will show if there is any fluid around the lungs or tumors in the lungs. Imaging tests enable your doctor to see the mass in your pelvis. An ultrasound of the pelvis

# Evaluation and Treatment for Women With Epithelial Ovarian Cancer

## Primary (Main) Treatment<sup>1</sup>

Remove uterus, ovaries, and fallopian tubes; do surgical staging

**OR**

Do surgical staging and if patient wants to have more children and tumor is in only one ovary and has not spread outside of ovary (Stage 1A–C), remove only the cancerous ovary

**OR**

Remove uterus, both ovaries, and fallopian tubes; remove all visible cancer (or as much as safely possible), if cancer has spread outside of ovary

**OR**

In patients with bulky advanced cancer (stage III, IV), who cannot have extensive surgery, do tests (such as biopsy, or paracentesis) to verify cancer and consider starting chemotherapy before surgery to be followed by debulking surgery to remove all visible cancer.

See *Additional Treatment After Surgery* on pages 32–33

See *Treatment for Women with Ovarian Cancer Who Already Had Surgery* on pages 28–29

<sup>1</sup> Evaluation by a gynecologic oncologist is recommended

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can tell how large the mass is and whether it has spread to other pelvic structures. A CT scan is more precise and can tell if there is widespread involvement of other pelvic and abdominal organs or structures. A *barium enema* or colonoscopy can find out if the ovarian cancer is growing into your *large intestine*. This would make surgery more complicated.

Blood tests are done to check how well your liver and kidneys are working and to make sure your blood cell counts are not too low. Low blood cell counts or problems with internal organs could mean that you are especially vulnerable to complications and side effects of certain ovarian cancer treatments, so these tests must be done before your treatment begins.

Another blood test, the CA-125, is a tumor marker for ovarian cancer. If the CA-125 level is high before treatment, it should go down after surgery if all the cancer has been removed. If CA-125 doesn't decrease, then the cancer wasn't completely removed.

If you or anyone else in your family has had breast or ovarian cancer, you may have a mutation of the BRCA gene, which often leads to ovarian cancer. About 10% of ovarian cancers result from an inherited tendency to develop the disease. This should be evaluated to find out whether any of your close relatives or children are at risk for cancer and to help assess your risk for other cancers. Before having genetic tests, you should discuss their benefits and potential drawbacks with a genetic counselor. Genetic testing can find out if you and other members of your family carry certain gene mutations that cause a high risk of ovarian cancer. Women with high-risk gene mutations and those with a strong family history who have not undergone genetic

testing may benefit from *screening* tests for ovarian cancer that are not recommended for women of average risk. (For more information on this, contact the American Cancer Society)

The results of these tests will help your doctors plan your surgery. If you have any questions about the stage of your cancer after reading the information in this report, ask your doctor. Your doctor can estimate your stage from this information but won't know for sure until the surgery is done. It is important to know the *stage* of your cancer (stage I, II, III, or IV), because it affects how your cancer is treated.

During surgery, if your surgeon finds that you have stage I ovarian cancer, then both of your ovaries, uterus, and fallopian tubes are usually removed. The surgeon also takes a biopsy of several sites throughout your pelvis and abdomen and removes your omentum (a fatty tissue covering your intestine). If your tumor is stage IA (the cancer is in just one ovary and has not spread) and you wish to

## NOTES

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## Evaluation and Treatment for Women With Epithelial Ovarian Cancer (continued)

have babies, then the surgeon can remove just the cancerous ovary and its tube and can leave the other ovary and your uterus in place. In some situations, this less extensive surgery can be done with several small incisions (instead of one large incision) by using laparoscopy.

If your cancer has spread outside the ovary (stage II, III, or IV), your surgeon will try to remove (debulk) all the cancer. The goal is to remove as much of the cancer as possible. Even if your cancer is stage IV, which means that it has spread beyond the pelvis, you may still have debulking surgery. The surgeon will only do this if the amount of cancer that has spread is not too great. Your doctor may also insert a *catheter* (a thin tube) into your abdomen, which can be used to give chemotherapy directly into your abdomen after surgery. If there seems to be a lot of cancer present before the operation (bulky stage III or IV), your doctors may first decide to confirm the diagnosis of ovarian cancer,

either by removing some fluid from your abdomen and looking at the cells under the microscope, or by performing a biopsy. If this confirms you have ovarian cancer, they may advise you to have chemotherapy to shrink the tumor before surgery. In this case, they may wait until after chemotherapy, to operate. At this time, all of your internal female organs (uterus, tubes, ovaries) will be removed, along with as much cancer outside those organs as can be removed safely.

Sometimes during surgery for an ovarian tumor, the surgeon may realize that he or she cannot do all of the surgery that needs to be done (see “ovarian cancer diagnosed by surgery” section of the decision tree.) When this surgery is complete and you have recovered, you may be referred to a gynecologic oncologist for further treatment. Your evaluation will be the same as if you had never had surgery. Your consulting doctor will do any tests that haven’t been done and may even repeat some tests.

### NOTES

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## Initial Work-up (Evaluation)

Previous surgery was adequate

Previous surgery was incomplete:

- Uterus was not removed or,
- Fallopian tubes were not removed or,
- Omentum (fatty covering of intestine) was not removed or,
- Extent of staging not known or,
- Cancer that can be removed was left in place

Stage IA or IB and Grade 1  
(confined to one or both ovaries and low grade – slow growing)

Stage IA or IB and Grade 2  
(confined to one or both ovaries and medium grade)

Stage IA or IB and Grade 3  
(confined to one or both ovaries and high grade – fast growing)

**OR**

Stage IC (cancer cells on outside of ovary or in abdominal fluid or washings)

Stage II, III, or IV (Cancer is forming tumors outside the ovary)

### **Treatment for women with epithelial ovarian cancer who have already had surgery**

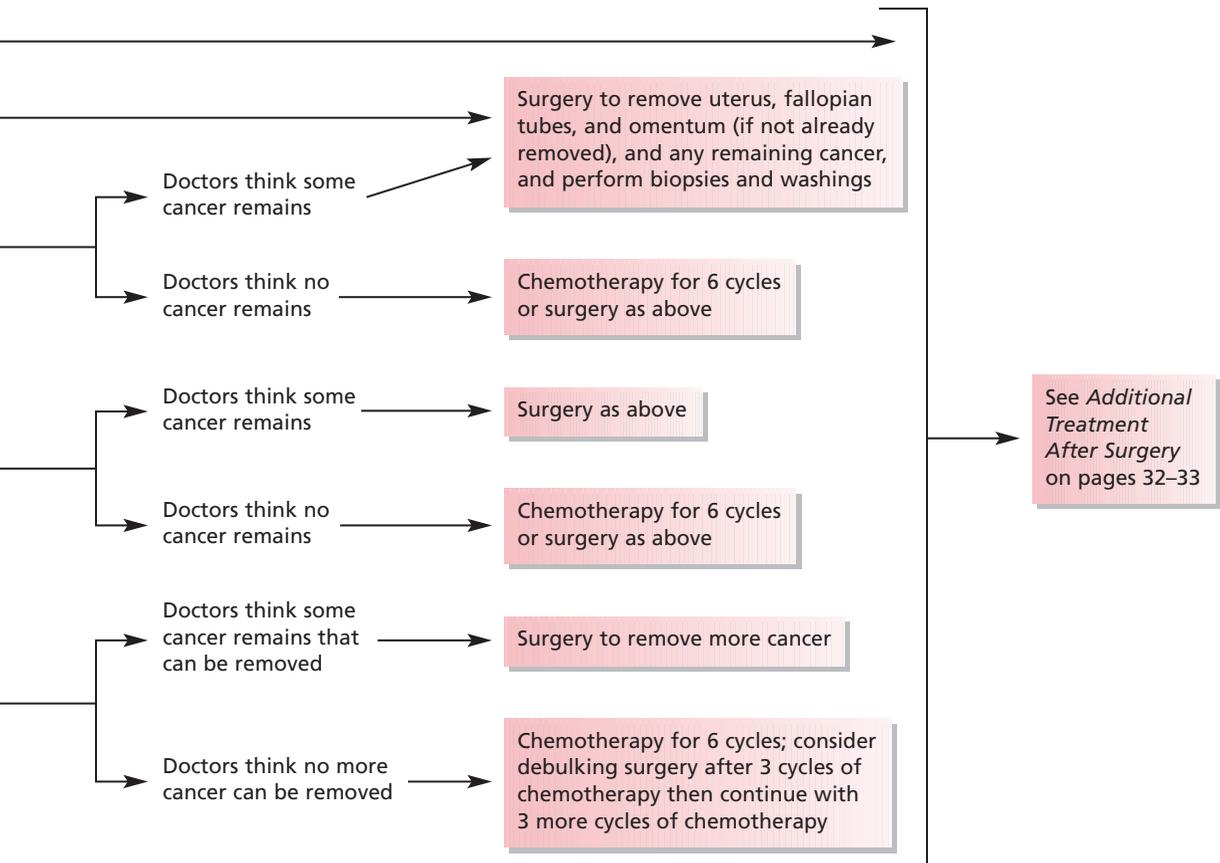
Sometimes women have surgery for an ovarian tumor, but full staging and/or debulking was not done. In this situation, the patient may be referred to a gynecologic oncologist who can decide whether more surgery is needed. This decision depends on what was found at the

first surgery, the pathology reports, and whether chemotherapy is considered.

If your doctors think the surgery was adequate, then chemotherapy may be the next step (see decision tree entitled *Additional Treatment After Surgery for Epithelial Ovarian Cancer*). If your doctors think that the surgery was not adequate, the next steps depend on how far they think the cancer has spread (stage) and

# Treatment for Women With Epithelial Ovarian Cancer Who Have Already Had Surgery

## Primary Treatment<sup>1</sup>



<sup>1</sup> Evaluation by a gynecologic oncologist is recommended

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grade (how abnormal the cells look under a microscope). If the cancer is thought to be stage IA or IB and slow-growing (which is Grade 1), your doctors will recommend another operation. This surgery will remove

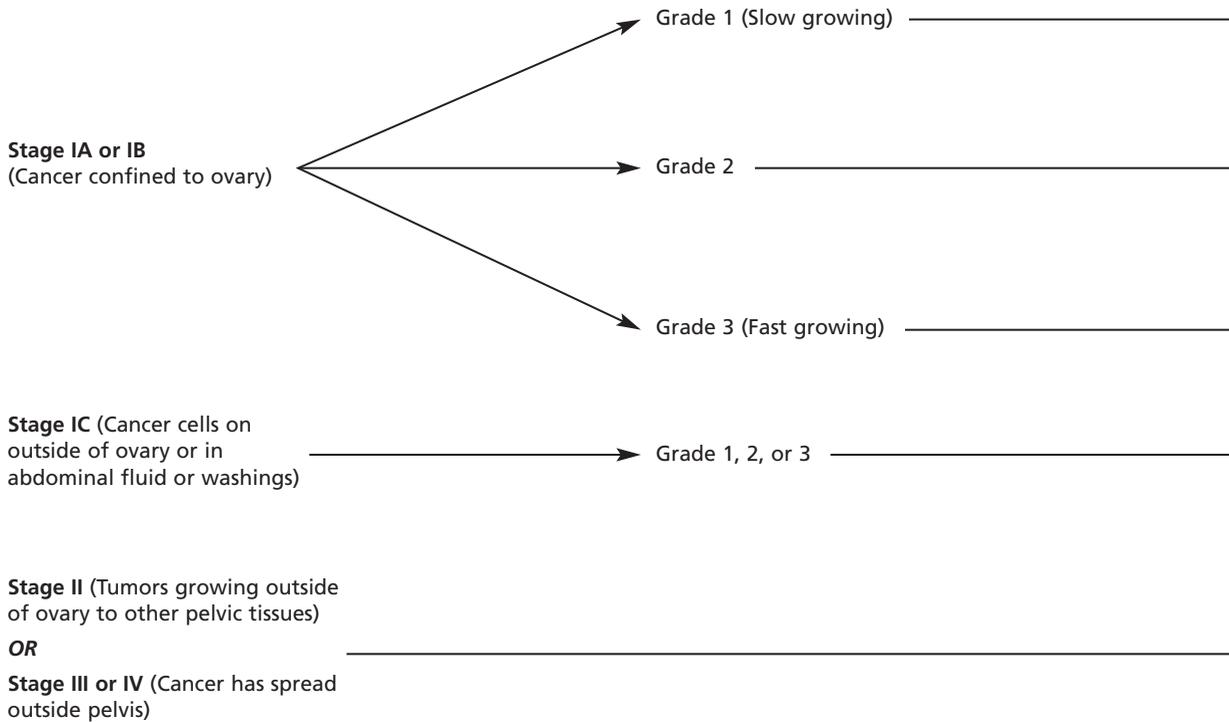
the uterus, fallopian tubes, omentum, and any other cancer they find. The surgeon will also take several biopsies (tissue samples) and washings from the abdominal and pelvic cavity.





## Stage

## Cancer Grade



### Additional treatment after surgery for epithelial ovarian cancer

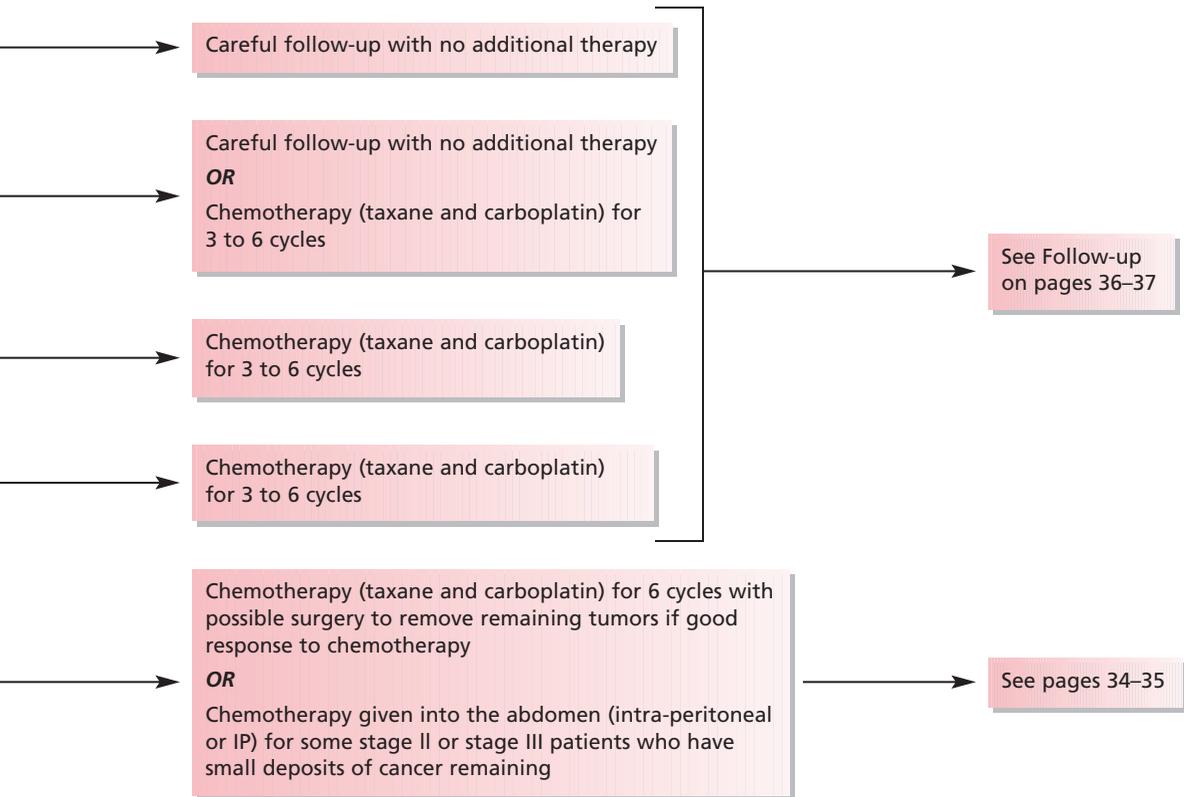
If your cancer is stage IA or IB and grade 1, you will be carefully observed for recurrence (see decision tree *Follow-up or Treatment After Initial Treatment of Ovarian Cancer*). If the tumor is grade 2, you have two options: careful follow-up (observation) with no additional treatment unless the cancer recurs, or intravenous chemotherapy with a taxane

(paclitaxel or docetaxel) and carboplatin for 3 to 6 cycles. If your cancer is grade 3, or stage IC, you should receive intravenous chemotherapy with 3 to 6 cycles of a taxane (paclitaxel or docetaxel) and carboplatin.

If your cancer is stage II, III, or IV, there are two options. The first treatment for most patients is 6 cycles of intravenous chemotherapy with a taxane (paclitaxel or docetaxel) and carboplatin, followed by surgery to remove

# Additional Treatment After Surgery for Epithelial Ovarian Cancer

## Adjuvant (Additional) Treatment

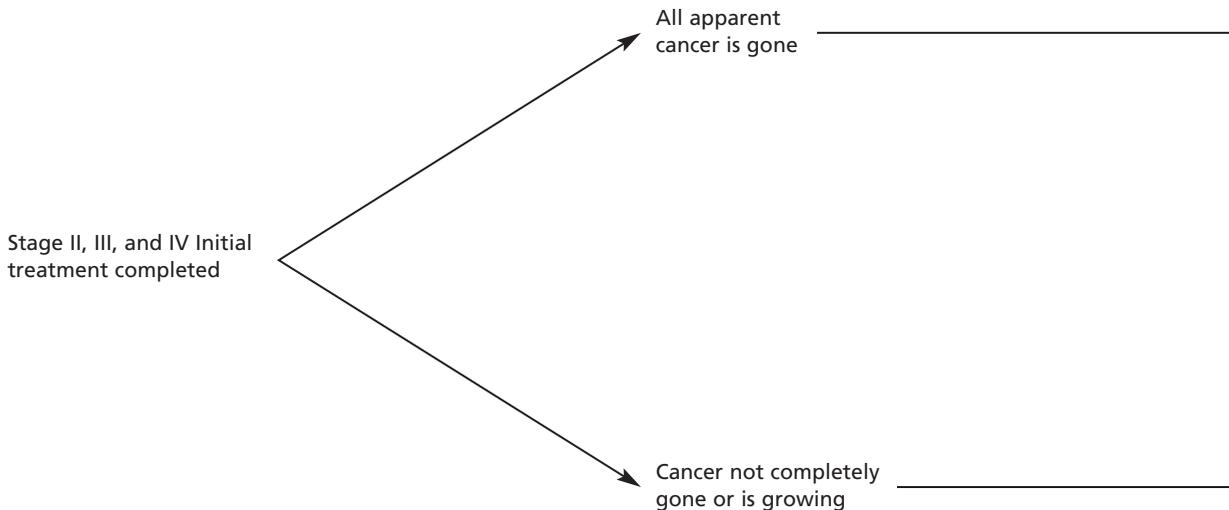


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any remaining tumor if there is a good response to chemotherapy. The preferred intravenous chemotherapy is paclitaxel and carboplatin. For some stage II-III patients with only very small amounts of remaining cancer,

one option is chemotherapy given into the abdominal cavity (intra-peritoneal chemotherapy). You may also want to find out if you qualify for any clinical trials.

## Response



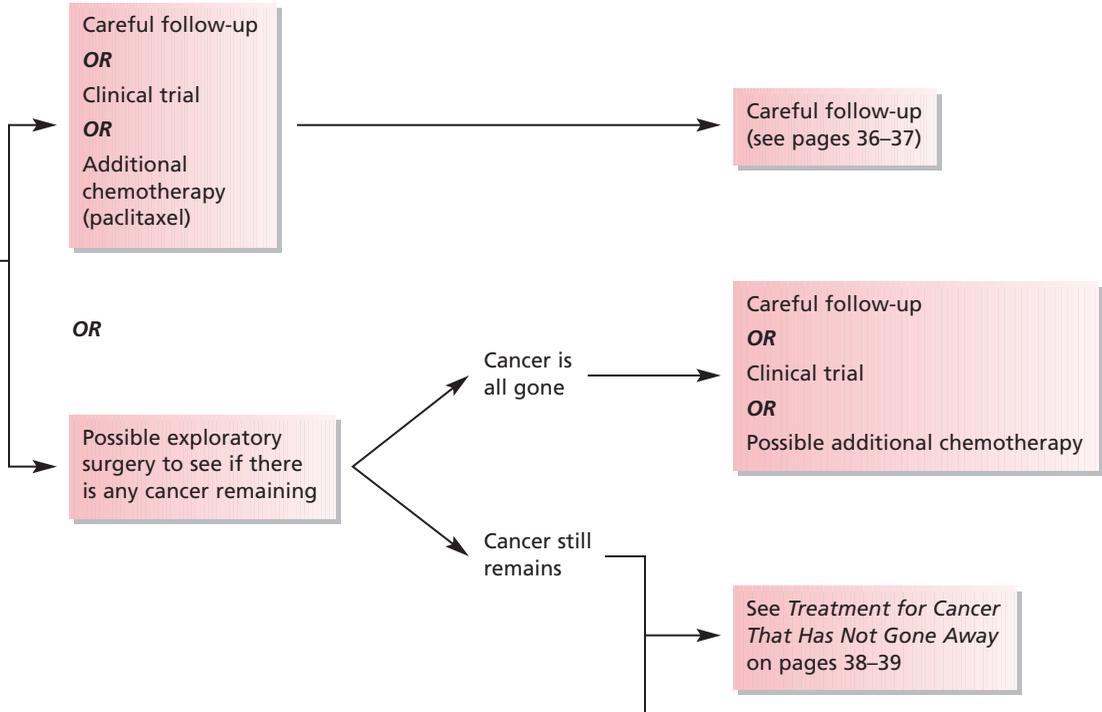
### ***Follow-up and treatment after initial treatment of stage II, III, and IV epithelial ovarian cancer***

If you have stage II, III, or IV cancer that disappears after chemotherapy (complete remission), you have several options. The first is careful

observation (see page 36) with no further treatment unless the cancer comes back. Entering a clinical trial is a second option (see “About Clinical Trials”). Other options include chemotherapy with paclitaxel (which is occasionally recommended) or second sur-

# Follow-up and Treatment After Initial Treatment of Stage II, III, and IV Epithelial Ovarian Cancer

## Additional Treatment



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gery to see if the cancer really has completely gone away (which is rarely recommended). If surgery confirms the cancer has gone away completely, then the options are the same as listed above after treatment (observation,

clinical trial, chemotherapy). If the cancer has not disappeared or is growing, then you need to consider your options as outlined in *Treatment for Cancer That Has Not Gone Away or Has Come Back*.

## Observation During Complete Remission After Initial Treatment of Epithelial Ovarian Cancer

- Doctor visits every 2–4 months for 2 years, every 6 months for 3 years, and then every year with physical examination including pelvic exam
- Blood counts every year
- If CA-125 was elevated at or near the time of diagnosis, it should be repeated at every visit
- Blood chemistry tests for liver and kidney function if doctor thinks necessary
- Imaging studies (such as CT or PET of chest/abdomen/pelvis and chest x-ray) if needed

CA-125 is rising or there is physical evidence of the cancer coming back (no previous chemotherapy)

There is physical evidence of the cancer coming back and chemotherapy has been given before

CA-125 is rising and chemotherapy has been given before

### **Observation during complete remission after initial treatment of epithelial ovarian cancer**

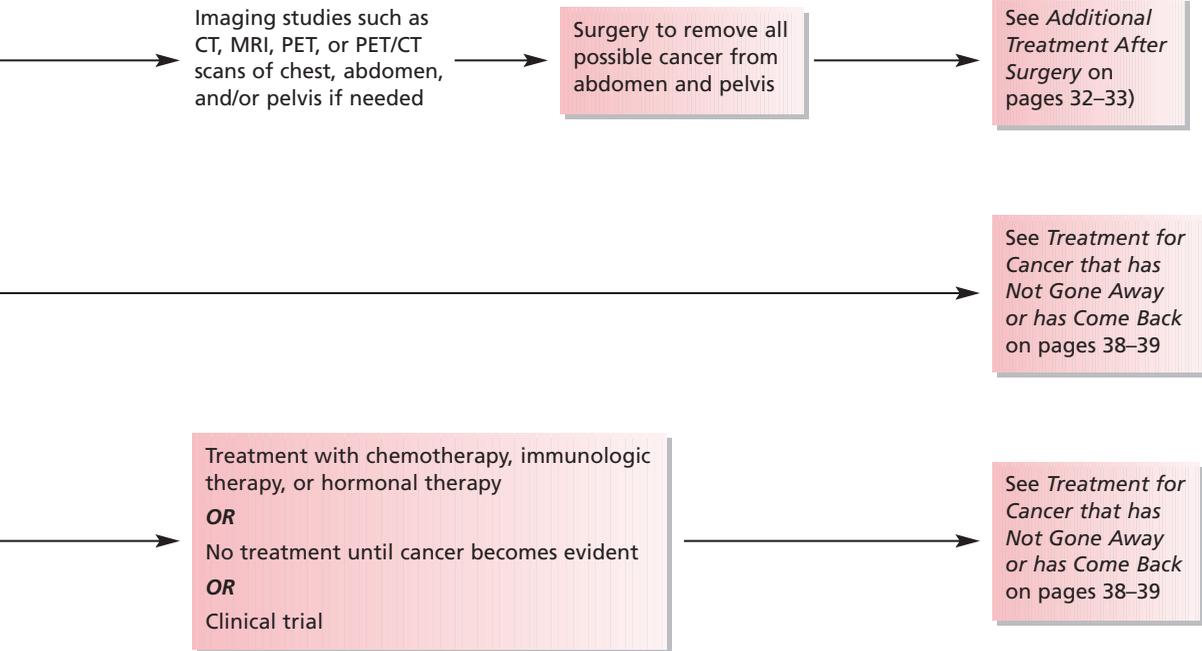
If you had any stage ovarian cancer and there is no evidence of any cancer remaining after treatment, this is called a complete response to treatment or a complete remission. Even though no more treatment is recommended at this point, you will need careful observation. You should see your doctor every 2 to 4 months for 2 years and then every 6 months for the next 3 years. At these visits, your doctor will do a physical and pelvic exam, perform routine blood and chemistry tests as necessary, and

test for CA-125 in your blood if this was ever elevated. You may also have a CT or PET scan of your chest, abdomen and pelvis or a chest x-ray if the doctor thinks it's needed. Between scheduled visits, if you have symptoms that suggest the cancer might have returned (such as swelling of the abdomen, weight loss, back pain, or shortness of breath), you should call and set up an appointment with your doctor right away.

If either the CA-125 level begins rising or physical signs suggest that the cancer is coming back and if you had no previous chemotherapy, surgery to remove as much tumor as possible is

# Observation During Complete Remission After Initial Treatment of Epithelial Ovarian Cancer

## Treatment if the Cancer Comes Back



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recommended. Sometimes imaging studies are done before surgery. After surgery, you need more treatment as noted in the decision tree *Additional Treatment After Surgery*. If you had chemotherapy, but you have signs that suggest the cancer is coming back, further treatment is outlined in *Treatment for Cancer That Has Not Gone Away or Has Come Back*.

If the only sign is a rising CA-125 and you have had previous chemotherapy, you have three options. You can take part in a clinical trial; you can delay treatment until physical signs of the cancer come back; or you can start combination chemotherapy, hormonal therapy, or immunologic therapy (see *Treatment for Cancer That Has Not Gone Away or Has Come Back*).

## Response

The cancer hasn't shrunk or is growing during the first chemotherapy regimen

**OR**

The cancer has come back within 6 months of last chemotherapy treatment after completely disappearing (complete remission)

The cancer was stage II, III, or IV and only partly shrunk with chemotherapy

The cancer completely disappeared (complete remission) with chemotherapy, but came back more than 6 months after the last chemotherapy treatment

The cancer completely disappeared with chemotherapy (complete remission). Only a small amount of cancer has come back more than 6 months after the last chemotherapy treatment

### ***Treatment for epithelial ovarian cancer that has not gone away or has come back***

If the cancer didn't shrink or is growing during the first chemotherapy or it came back within 6 months of the last chemotherapy treatment, it is not likely to respond to chemotherapy.

One option is supportive (palliative) care with measures to give you the best possible quality of life. Another option is chemotherapy, hormone therapy, or immunologic therapy with a drug called bevacizumab. If there is not a good response after the second attempt at chemotherapy, decisions about further care

# Treatment for Epithelial Ovarian Cancer That Has Not Gone Away or Has Come Back

## Treatment

Supportive care with management of any symptoms

OR

Treatment with a different chemotherapy, hormonal therapy, or immunologic therapy

Treatment with a different chemotherapy, hormonal therapy, or immunologic therapy

OR

Observation

Chemotherapy with carboplatin and either paclitaxel or gemcitabine

OR

Treatment with a different chemotherapy, hormonal therapy, or immunologic therapy

Surgery to remove the cancer

OR

Chemotherapy with carboplatin and either paclitaxel or gemcitabine

OR

Both surgery and chemotherapy

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(additional treatment, supportive care, or clinical trials) should be discussed carefully with your doctor.

If the cancer is stage II, III, or IV and shrunk some with chemotherapy, your doctor may recommend chemotherapy (either the same

chemotherapy or a new chemotherapy drug), hormonal therapy, or immunologic therapy. Or, your doctor may closely observe you and hold off treatment. Again, if there is not a good response with the second attempt at chemotherapy, you may want to carefully

discuss further treatment options such as supportive care, a clinical trial, or any further treatment with your doctor.

If the cancer came back more than 6 months after chemotherapy ended, you may receive the same chemotherapy again (pacli-

taxel and carboplatin); switch to carboplatin and gemcitabine; or receive different chemotherapy, hormonal therapy, or immunologic therapy. If only a small amount of cancer came back more than 6 months after chemotherapy, another option is surgery to remove

## NOTES

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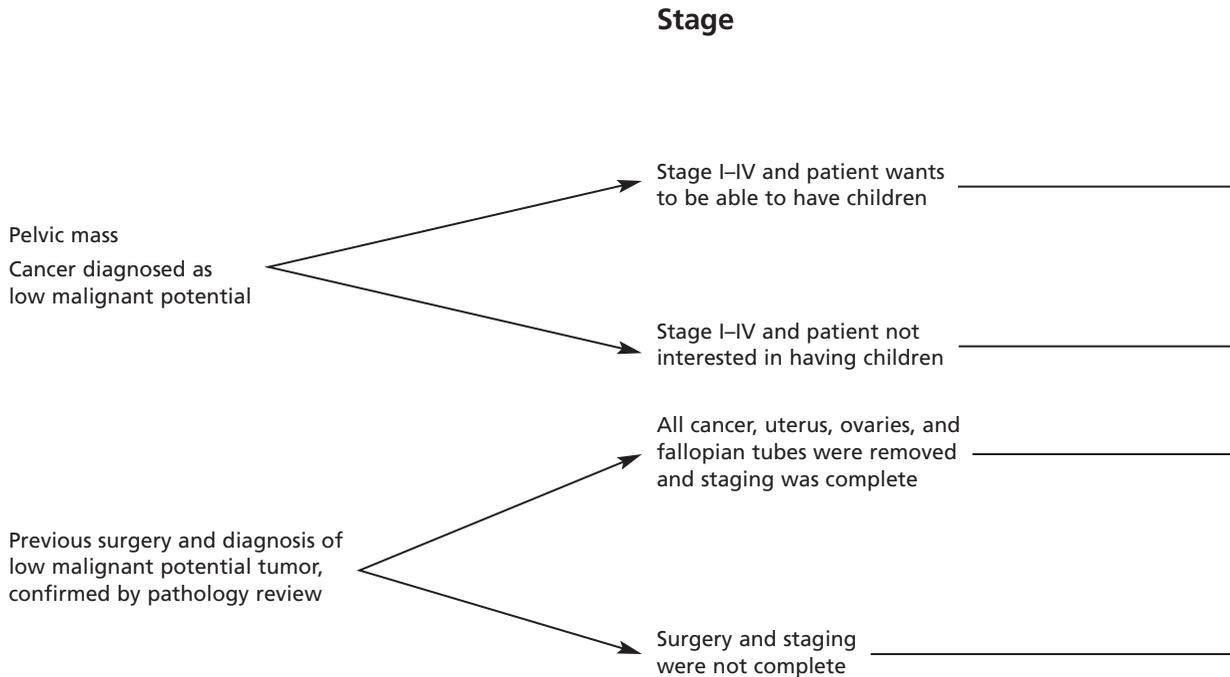
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## Borderline Epithelial Ovarian Cancer

### *Work-up and treatment of borderline epithelial ovarian cancer*

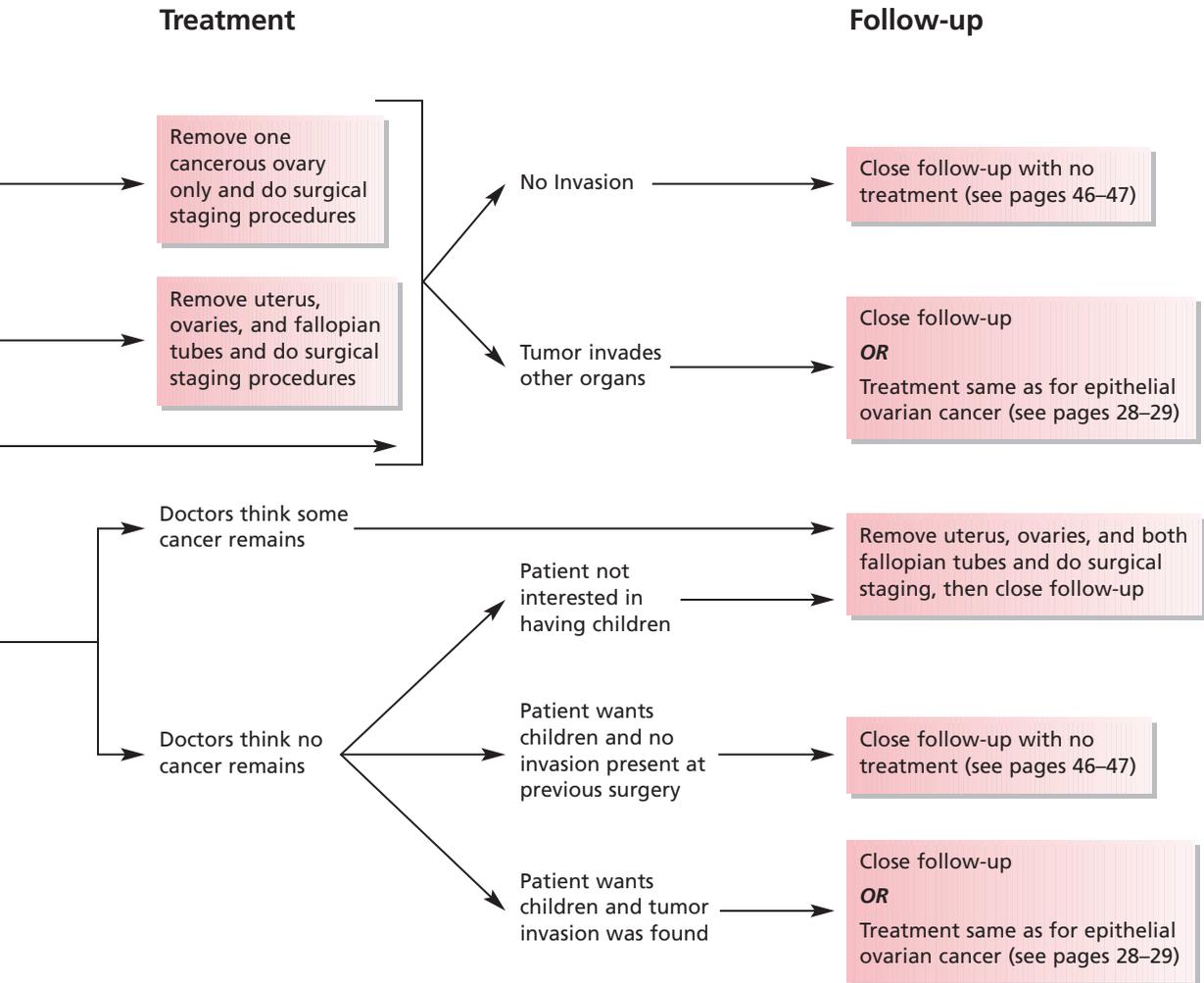
A borderline epithelial ovarian cancer differs from epithelial ovarian cancer in that it is less malignant. Although this tumor looks like cancer in many ways, it doesn't invade normal tissues or spread as readily as epithelial ovarian cancer. Women with this kind of borderline epithelial ovarian cancer tend to be younger, and often the cancer is diagnosed at an early

stage. Doctors treat this kind of ovarian cancer differently. Because of this, the NCCN has a separate guideline for its treatment.

This decision tree begins when you have a mass in your pelvis that is probably arising from your ovary or any other symptoms that might suggest ovarian cancer.

The next step is a series of examinations and tests that doctors call the initial workup. The history and physical exam will suggest that you might have ovarian cancer and how far it may have spread. Because your doctors

# Work-up and Treatment of Borderline Epithelial Ovarian Cancer



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might not be able to be sure that you have borderline epithelial ovarian cancer, you will then have a group of tests that are designed

to find out the stage of the cancer. These tests are similar to those done in the initial work-up for epithelial ovarian cancer (see page 24).

The major difference from the usual treatment of epithelial ovarian cancer is that no matter what your stage, if you want to have children, it is often possible to remove only the diseased ovary. Your doctors will usually be able to leave your other ovary and your uterus. The surgeon will also take biopsy samples from several sites throughout your pelvis and abdomen to see if the tumor has implanted outside the ovaries. On the other hand, if you do not wish to have children in the future, your surgeon will remove both ovaries, your uterus, and the fallopian tubes and perform the needed biopsies. If your cancer has spread outside the ovary, your surgeon will try and remove all the cancer. The goal is to avoid leaving cancer behind.

After surgery, there will usually be no further treatment. If any tumor implants outside the

ovary were found, options include no treatment with careful observation over many years, or chemotherapy, which is only occasionally considered.

Sometimes during surgery for an ovarian tumor, the surgeon may realize that he or she cannot do the operation that needs to be done (see “previous surgery and diagnosis of low malignant potential” section of the decision tree.) When the surgery is over and you have recovered, you may be referred to a gynecologic oncologist for a second opinion. Your evaluation will be the same as if you had never had surgery. Your consulting doctor will perform any of the tests that hadn’t been done and perhaps repeat some tests. The most important step will be to evaluate your records to find out whether your prior surgery was adequate.

## NOTES

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## Work-up and Treatment of Borderline Epithelial Ovarian Cancer (continued)

If your doctors think the surgery was adequate and complete, then you will be carefully observed. If there were tumor implants outside the ovary, chemotherapy is occasionally used with the same agents as for epithelial ovarian cancer (such as paclitaxel and carboplatin).

If your doctors think that the surgery wasn't complete and that cancer may be left behind, you will have more surgery to remove this cancer. The surgery will include the removal of any remaining ovary, fallopian tube, and uterus, as well as multiple biopsies from your pelvis and abdomen. If you do not wish to have children, even if your doctors think all the cancer was removed, they will still recommend further surgery to remove any remaining ovary, fallopian tube, and uterus,

as well as to obtain multiple biopsies from your pelvis and abdomen. Fertility-sparing surgery (that which allows childbearing afterward) is only done if there are no invasive implants and no remaining cancer.

If you still want to have children and your doctors think that the first surgery was not complete but found no invasion, and they believe that there is no remaining cancer, they will recommend careful observation.

If the original surgery wasn't complete, but your doctors think there is no remaining cancer, close observation may be recommended even if tumor invasion was found. However, in this case chemotherapy may also be an option.

### NOTES

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## Follow-up

- Visits every 2–6 months for 2 years then visits every 3–6 months for 5 years with physical examination, then once a year
- If only the cancerous ovary was removed so that the patient is able to have children, ultrasound may be done from time to time
- Complete blood counts and blood chemistry tests as needed
- Blood test for CA-125 at every visit if it was initially elevated
- If one ovary was removed so that patient was able to have children, surgery may be recommended to remove rest of pelvic organs when childbearing is complete
- Consider genetic counseling if:
  - Patient has also had breast cancer
  - Ovarian or breast cancer in family, especially male breast cancer
  - Several types of cancer on same side of family

## Recurrence

→ If the cancer comes back

### ***Follow-up after initial treatment of borderline epithelial ovarian cancer***

After your treatment, you will need careful observation. You should see your doctor every 2 to 6 months for 2 years and then every 3–6 months for up to 5 years, and then once a year. At these visits, your doctor will examine you, including a pelvic exam, perform routine

blood and chemistry tests if he or she thinks necessary, and test for CA-125 in your blood if this was high at first. If only the cancerous ovary was removed, your doctor may also order an ultrasound examination of your pelvis.

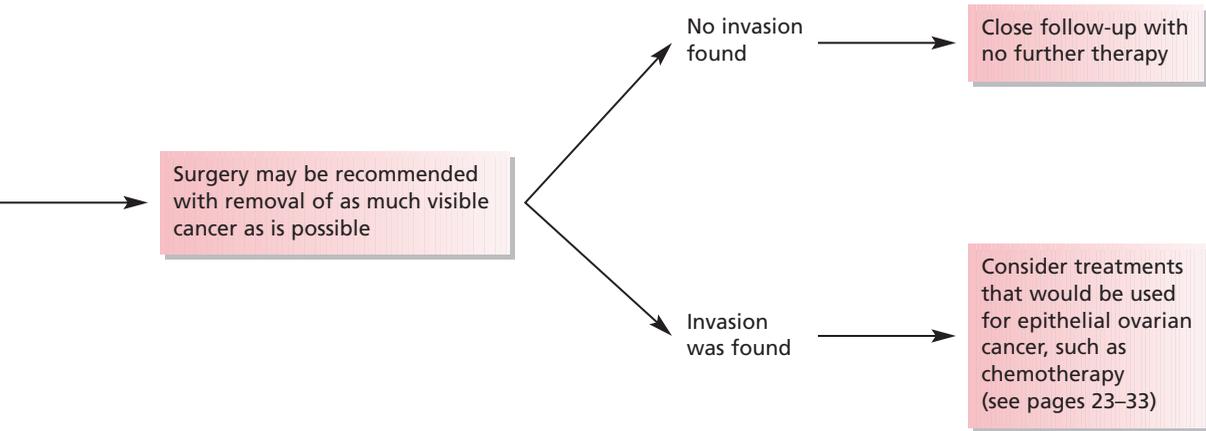
If your other pelvic organs were not removed, once you have had all the children you want, you should consider surgery to

# Follow-up After Initial Treatment of Borderline Epithelial Ovarian Cancer

## Treatment

## Response

## Follow-up and Treatment



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remove your other ovary, as well as your uterus and fallopian tubes. Your doctor may recommend genetic counseling if there is a family history of ovarian and/or breast cancer.

If either the CA-125 begins rising or physical or x-ray signs suggest that the cancer is coming

back, you should undergo exploratory surgery to remove as much tumor as possible. If no tumor implants outside the ovary were found, then you will go back to routine follow-up. If tumor implants were found, chemotherapy is occasionally considered.

# Glossary

## **Abdomen**

The part of the body between the chest and pelvic bones. It contains the stomach, small and large intestine, liver, gallbladder, spleen and pancreas.

## **AJCC Staging System**

American Joint Committee on Cancer staging system (also called the TNM system), which looks at tumor size and how far it has spread to describe the extent of a cancer's spread in Roman numerals from 0 through IV. See also *staging, FIGO*.

## **Alternative therapy**

Use of an unproven therapy *instead of* standard (proven) therapy. Some alternative therapies have dangerous or even life-threatening side effects. With others, the main danger is that the patient may lose the opportunity to benefit from standard therapy. The American Cancer Society encourages patients considering the use of any alternative or complementary therapy to discuss this with their health care team.

## **Analgesic**

A drug that treats pain.

## **Anemia**

Low red blood cell count. A symptom of anemia is usually fatigue.

## **Anti-emetic drug**

A drug that prevents or relieves nausea and vomiting, common side effects of chemotherapy.

## **Aorta**

The major artery of the body, which runs from the heart down through the chest and the back of the abdomen.

## **Ascites**

Fluid that builds up inside the abdomen.

## **BRCA1/BRCA 2**

Genes, which, when damaged (mutated), place a woman at greater risk of developing breast and/or ovarian cancer.

## **Barium enema x-ray**

A test to see if cancer has invaded your colon (large intestine) or rectum. (It is also used to look for colorectal cancer). The barium outlines your colon and rectum on x-rays of your abdomen. Also called a *double contrast barium enema*.

## **Benign**

Not cancer; not malignant.

## **Biopsy**

The removal of a sample of tissue to see whether cancer cells are present. There are several kinds of biopsies, including fine needle aspiration biopsy, core biopsy, or CT-guided needle biopsy. Often in ovarian cancer, biopsies are obtained by surgically removing a piece of the tumor mass.

**Bladder**

The organ where urine is stored before it is passed out of the body.

**Blood chemistry**

A blood test that tells about your liver and kidney function and your blood mineral balance.

**Borderline epithelial ovarian cancer**

A type of slow-growing ovarian cancer. These tumors do not invade the ovary, but sometimes invade other tissues. Also called tumors of low malignant potential.

**CA-125**

A protein that is found in larger amounts in the blood of many women with ovarian cancer.

**Capsule**

The outer covering of the ovary. This term also can refer to the outer covering of a mass or tumor.

**Carcinoma**

A malignant tumor that begins in the lining or covering layer (epithelial cells) of organs. At least 80% of all cancers are carcinomas.

**Catheter**

A thin, flexible tube that is inserted to allow fluids to enter or leave the body.

**Chemotherapy**

Treatment with drugs to destroy cancer cells, sometimes called “chemo.” Chemotherapy is often used with surgery to treat cancer when the cancer has spread, when it has come back (recurred), or when there is a strong chance that it could recur.

**Chemotherapy cycle**

A fixed sequence of chemotherapy drugs that is usually repeated on a regular schedule.

**Clinical stage**

Describes the extent of cancer present based on results of diagnostic tests and the physical examination. See also staging and pathologic stage.

**Clinical trial**

Studies of promising new or experimental treatments in patients. Clinical trials are only done when there is some reason to believe that the treatment being studied may be valuable to the patient.

**Colonoscopy**

A medical test in which a slender, flexible, hollow lighted tube about the thickness of a finger is inserted through the rectum up into the colon. The colonoscope is connected to a video camera and video display monitor so the doctor can look closely at the inside of your colon.

**Complementary therapy**

Unconventional treatments that are used *in addition to* standard therapy. Although most have not been proven to work, some complementary therapies may help relieve certain symptoms of cancer, relieve side effects of standard cancer therapy, or improve a patient’s sense of well-being. A few of these treatments can interact badly with medicines, and many have side effects. The American Cancer Society encourages patients considering the use of any complementary or alternative therapy to discuss this with their health care team.

### **Complete blood count (CBC)**

A blood test that counts of the number of red blood cells and white blood cells in a given sample of blood. It can find out if you have too few red blood cells (anemia). See also *anemia*.

### **Computed tomography (CT or CT scan, CAT scan)**

An imaging test in which many x-rays are taken from different angles of a part of the body. A computer combines these images to produce cross-sectional pictures of internal organs. Except for the injection of a dye (needed in some but not all cases), this is a painless procedure that can be done in an outpatient clinic. It is often referred to as a “CT” or “CAT” scan.

### **Cyst (or cystic tumor)**

A fluid-filled mass that is usually benign. The fluid can be removed for analysis.

### **Cytoreduction**

The removal of as much cancer as possible, usually by surgery. Also called debulking.

### **Debulking**

Another term for cytoreduction.

### **Diaphragm**

The large flat muscle that separates the lungs from the abdomen and is responsible for breathing.

### **Epithelial ovarian tumor**

A type of ovarian tumor that starts from the cells that cover the outer surface of the ovary. This is the most common type of ovarian cancer.

### **Epithelium**

The tissue that lines or covers most organs.

### **Estrogen**

A female sex hormone produced mainly by the ovaries, and in smaller amounts by the adrenal cortex.

### **External beam radiation**

A form of palliative (not curative) treatment in which radiation is focused from a source outside the body on the area affected by the cancer. It is much like getting a diagnostic x-ray but for a longer time.

### **Fallopian tubes**

A pair of thin tubes that transport eggs from the ovaries to the uterus where they may be fertilized by sperm; sometimes called uterine tubes.

### **FIGO**

Abbreviation for the International Federation of Gynecologists and Obstetricians. Their staging system for ovarian cancer corresponds to the AJCC Staging System, which is in common use. See also *AJCC Staging System*.

### **Genes**

Segments of DNA that contain information on inherited traits such as hair color, eye color, and height, as well as susceptibility to certain diseases.

### **Germ cell**

The reproductive cells of the body, that is, ova (eggs) or sperm.

### **Germ cell ovarian tumor**

A type of ovarian tumor that starts from the cells that produce the ova (eggs).

### **Grade**

The grade of a cancer reflects how abnormal it looks under the microscope. The grading

system divides cancer into those that look the most abnormal (such as grade 3 epithelial ovarian carcinomas), the least abnormal (grade 1), and those in between (grade 2).

### **Gynecologic oncologist**

A doctor who specializes in cancers of women's reproductive organs and treats them with surgery and chemotherapy.

### **Hormonal therapy**

The use of drugs that block or inhibit sex hormones to slow down cancer growth or inhibit its return. Tamoxifen and the aromatase inhibitors (anastrozole, exemestane, or letrozole) are used to block or inhibit the female hormone estrogen. These drugs are most often used in treating breast cancer, but are sometimes used in ovarian cancer.

### **Hormone replacement therapy (HRT)**

The use of estrogen and sometimes progesterone, in women who have gone through menopause. This type of hormone therapy is often given to relieve symptoms of menopause and has been shown to offer protection against thinning of the bones (osteoporosis) in women after menopause.

### **Hysterectomy**

An operation to remove the uterus through an incision in the abdomen for cancer or through the vagina for non-cancerous conditions.

### **Imaging**

The term applied to methods used to produce a picture of internal body structures. Some imaging methods used to help diagnose cancer are x-rays, CT scans, magnetic resonance imaging (MRI), and ultrasound.

### **Immunologic therapy**

Treatments that promote or support the body's immune system response to a disease such as cancer. Also refers to medicines that are made in the lab but act like human antibodies that attack cancer cells.

### **Informed consent**

Legal document that explains a course of treatment, along with its risks, benefits, and possible alternatives. Also refers to the process by which patients agree to treatment.

### **Intraperitoneal chemotherapy (IP chemotherapy)**

Chemotherapy given directly into the abdomen.

### **Laparoscopy**

An operation where the surgeon operates through small openings in, for example, the abdomen. The surgeon sees the structures with a small telescope device called a laparoscope.

### **Large intestine**

Also called the colon, it is the lower part of the digestive tract and ends in the rectum. The colon is a muscular tube about 5 feet long.

### **Leukemia**

Cancer of the blood or blood-forming organs. Some anti-cancer drugs may rarely cause a secondary malignancy, most often acute myeloid leukemia.

### **Low malignant potential**

Refers to a tumor that is less likely to invade the body's tissues and organs than other cancerous tumors.

## **Lymph nodes**

Small bean-shaped collections of immune system tissue such as lymphocytes, found along lymphatic vessels. They help fight infections and also have a role in fighting cancer. Also called lymph glands.

## **Lymphatic system**

The tissues and organs (including lymph nodes, spleen, thymus, and bone marrow) that produce and store lymphocytes (cells that fight infection) and the channels that carry the lymph fluid. Invasive cancers sometimes penetrate the lymphatic vessels (channels) and spread (metastasize) to lymph nodes.

## **Magnetic resonance imaging (MRI)**

A method of taking pictures of the inside of the body. Instead of using x-rays, MRI uses a powerful magnet and transmits radio waves through the body; the images appear on a computer screen as well as on film.

## **Malignant**

Cancerous.

## **Metastasis**

The spread of cancer cells to distant areas of the body by way of the lymph system or bloodstream.

## **Mutation**

A change in the DNA of a cell. All types of cancer are thought to be due to mutations that damage a cell's DNA. Some cancer-related mutations can be inherited, which means that the person is born with the mutated DNA in all the body's cells. However, most mutations happen after the person is born, and are called sporadic mutations. This type of mutation starts in a single cell, and only

affects the cells that arise from the first mutated cell.

## **Omentum**

A layer of fatty tissue that overlies the intestinal contents like an apron.

## **Omentectomy**

Removal of the omentum (see *omentum*.)

## **Oophorectomy**

Surgery to remove an ovary. A *bilateral* oophorectomy means both ovaries and *unilateral* oophorectomy means only one ovary is removed. A *prophylactic* oophorectomy means removal of the ovaries before cancer occurs.

## **Oncologist**

A doctor with special training in the diagnosis and treatment of cancer.

## **Opioids**

Drugs related to opium, such as morphine, that are used for the treatment of pain.

## **Oral contraceptives**

Drugs taken by younger women that interfere with ovulation and therefore prevent pregnancy. Also called birth control pills.

## **Osteoporosis**

Thinning and weakening of the bones.

## **Palliative**

Treatment that relieves symptoms, such as pain, but is not expected to cure the disease. The main purpose is to improve the patient's quality of life.

## **Paracentesis**

Removal of fluid from the abdomen by a needle inserted through the abdominal wall.

**Pathologic stage**

Describes the extent of cancer present based on surgical removal and examination of tissue. See also staging and clinical stage.

**Pathologist**

A doctor that diagnoses diseases mainly by looking at tissue samples under the microscope.

**Pelvis**

The part of the body below the abdomen within the confines of the pelvic bones.

**Perimenopausal**

The time around when a woman's menstrual periods are stopping.

**Peritoneum**

The lining of the abdomen.

**Pleural effusion**

Fluid that builds up in the chest cavity.

**Positron emission tomography (PET) scan**

An imaging scan that creates a picture of the body after the injection of a very low dose of a radioactive form of sugar. The scan computes the rate at which body tissues are using the sugar. In general, high-grade tumors use more sugar than normal and low-grade tumors use less. PET scans may also be used to see how well the tumor is responding to treatment.

**Postmenopausal**

The time after a woman's menstrual periods have stopped.

**Primary peritoneal carcinoma**

A cancer that behaves and looks like ovarian cancer but begins in the lining of the abdomen.

**Progesterone**

A female sex hormone released by the ovaries during every menstrual cycle to prepare the uterus for pregnancy and the breasts for milk production (lactation).

**Prognosis**

A prediction of the course of disease; the outlook for the chances of survival.

**Radiation therapy**

Treatment with high-energy rays (such as x-rays) to kill or shrink cancer cells. In treatment for ovarian cancer, the radiation usually comes from outside of the body (external radiation).

**Rectum**

The end of the large intestine leading to the anus. It lies within the pelvis.

**Recurrence**

Cancer that comes back after treatment. Local recurrence means that the cancer has come back at the same place as the original cancer. Regional recurrence means that the cancer has come back in the lymph nodes near the first site. Distant recurrence is when cancer metastasizes after treatment to organs or tissues (such as the lungs, liver, bone marrow, or brain) farther from the original site than the regional lymph nodes.

**Remission**

Complete or partial disappearance of the signs and symptoms of cancer in response to treatment; the period during which a disease is under control. A remission may not be a cure.

## **Salpingectomy**

An operation that removes the fallopian tube(s), usually performed along with hysterectomy and oophorectomy.

## **Salpingo-oophorectomy**

Refers to removal of the fallopian tube and ovary. A *bilateral* salpingo-oophorectomy means that both tubes and ovaries are removed; a *unilateral* salpingo-oophorectomy means that only one tube and ovary were removed.

## **Screening**

The search for disease, such as cancer, in people without symptoms.

## **Sigmoid colon**

The lower part of the large intestine.

## **Stage**

Describes how much cancer is present. Determining the stage is essential for choosing the best treatment. In the case of ovarian cancer, the tumor stage describes how far the tumor has spread from where it started in the ovary. See also *clinical stage* and *pathologic stage*.

## **Stent**

A thin firm tube used to open constricted channels such as the ureters.

## **Stromal (or stromal cells)**

The cells of the ovary, other than the germ cells that make up its interior.

## **Stromal ovarian tumor**

A type of ovarian tumor that starts in the connective tissue cells that hold the ovary together (stroma) and produce the female hormones estrogen and progesterone.

## **Thoracentesis**

A procedure that removes fluid from the chest cavity by putting a needle through the chest wall between the ribs.

## **Transvaginal sonography**

Ultrasound performed by placing a probe in the vagina. A sensitive test for ovarian tumors.

## **Tubal ligation**

An operation that cuts and ties off the fallopian tubes to prevent pregnancy.

## **Ultrasound**

An imaging method in which high-frequency sound waves are used to outline a part of the body. The sound wave echoes are picked up and displayed on a television screen. Also called *ultrasonography*.

## **Undifferentiated**

The term applied to a cancer that, when viewed under the microscope, no longer looks like the tissue from which it starts. This usually implies a faster growing cancer.

## **Ureters**

Long thin tubes that carry urine, formed in the kidneys, into the bladder.

## **Uterus**

A pear-shaped organ in women that holds and nourishes the growing embryo and fetus, also called the *womb*. The uterus has 3 areas: the body or upper part; the isthmus or the narrowed central area; and the cervix, the lower portion.

## **X-rays**

One form of radiation that can be used at low levels to produce an image of the body on film or at high levels to destroy cancer cells.



# Current ACS-NCCN Treatment Guidelines for Patients

*Advanced Cancer and Palliative Care Treatment Guidelines for Patients*  
(English and Spanish)

*Bladder Cancer Treatment Guidelines for Patients* (English and Spanish)

*Breast Cancer Treatment Guidelines for Patients* (English and Spanish)

*Cancer Pain Treatment Guidelines for Patients* (English and Spanish)

*Cancer-Related Fatigue and Anemia Treatment Guidelines for Patients*  
(English and Spanish)

*Colon and Rectal Cancer Treatment Guidelines for Patients* (English and Spanish)

*Distress Treatment Guidelines for Patients* (English and Spanish)

*Fever and Neutropenia Treatment Guidelines for Patients with Cancer*  
(English and Spanish)

*Lung Cancer Treatment Guidelines for Patients* (English and Spanish)

*Melanoma Cancer Treatment Guidelines for Patients* (English and Spanish)

*Nausea and Vomiting Treatment Guidelines for Patients with Cancer*  
(English and Spanish)

*Non-Hodgkin's Lymphoma Treatment Guidelines for Patients* (English and Spanish)

*Ovarian Cancer Treatment Guidelines for Patients*

The Ovarian Cancer Treatment Guidelines for Patients were developed by a diverse group of experts and were based on the NCCN clinical practice guidelines. These patient guidelines were translated, reviewed, and published with help from the following individuals:

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