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Ovarian Cancer

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NCCN Guidelines for Patients®
Ovarian Cancer, 2022
Most ovarian cancers start in the layer of tissue surrounding the ovaries, called the epithelium. The information in this patient guide applies to the most common types of epithelial ovarian cancer.

The ovaries

The ovaries are a pair of organs in the female reproductive system. The reproductive system is the group of organs that work together for the purpose of sexual reproduction. In addition to the ovaries, this system includes the fallopian tubes, uterus, cervix, and vagina.

Each ovary is about the size and shape of a grape. The ovaries are located in the pelvis. The pelvis is the area below the belly (abdomen) and between the hip bones. One ovary is on the left side of the uterus and one is on the right. Each ovary is connected to the uterus by a long, thin tube called a fallopian tube.

The ovaries make eggs for sexual reproduction. They also make hormones that affect breast growth, body shape, and the menstrual cycle. Eggs pass out of the ovary and travel through the attached fallopian tube into the uterus. The uterus is where an unborn baby grows and develops during pregnancy. It is also called the womb. The uterus and at least one ovary are needed for menstruation and pregnancy.
Types of ovarian cancer

The most common type of ovarian cancer is epithelial ovarian cancer. It starts in the layer of tissue surrounding the ovaries (the epithelium). There are more than 5 different subtypes of epithelial ovarian cancer. Some are more common than others. The information in this patient guide applies to the most common forms of epithelial ovarian cancer, listed below:

- High-grade serous carcinoma
- High-grade endometrioid carcinoma

Less common ovarian cancers

Rare types of ovarian cancer are called less common ovarian cancers (LCOCs) or less common ovarian histologies (LCOHs). These less common types are listed below. Treatment of these ovarian cancers is addressed in the comprehensive NCCN Clinical Practice Guidelines in Oncology for Ovarian Cancer, but is beyond the scope of this guide.

Less common epithelial ovarian cancers:

- Low-grade serous carcinoma
- Low-grade endometrioid carcinoma
- Carcinosarcoma (malignant mixed Mullerian tumors [MMMTs] of the ovary)
- Clear cell carcinoma
- Mucinous carcinoma
- Low malignant potential (LMP) tumors (also called borderline epithelial tumors)

Less common non-epithelial ovarian cancers:

- Malignant sex-cord stromal tumors
- Malignant germ cell tumors

How is the type determined?

As discussed later in this guide, surgery is the recommended first treatment for most ovarian cancers when possible. The tumor and other tissue removed during surgery are sent to an expert in testing cells to find disease, called a pathologist. The pathologist determines the type of ovarian cancer by examining the cancerous tissue.

The pathologist also determines the cancer grade. This is different than the cancer stage. The cancer grade is a rating of how fast the cancer is expected to grow and spread. It is based on how abnormal the cancer cells look under a microscope. High-grade cancers grow and spread more quickly than low-grade cancers.
Cancer cells
Cancer cells act differently than normal cells. Cancer cells multiply out of control. Unlike normal cells, they make new cells that are not needed and do not die when they should. The cancer cells build up to form a primary tumor.

Cancer cells can also grow into (invade) other tissues. Normal cells do not do this. Over time, the primary tumor can grow large and invade tissues outside the ovary. Ovarian cancer often invades the fallopian tubes.

Unlike normal cells, cancer cells can spread to other parts of the body. This process is called metastasis. Ovarian cancer cells can break off (shed) from the primary tumor to form new tumors on the surface of nearby organs and tissues. These are called “implants” or “seeds.” Implants that grow into supporting tissues of nearby organs are called invasive implants. When these implants can be seen on a computed tomography (CT) scan, it is called “carcinomatosis.”

Cancer cells can also spread through blood or lymph vessels. Lymph is a clear fluid made of white blood cells that help fight germs. It travels in small tubes (vessels) to lymph nodes. Lymph nodes are small groups of disease-fighting cells that remove germs from lymph. Lymph vessels and nodes are found all over the body.

Testing for ovarian cancer
Your doctor may suspect ovarian cancer if you have certain symptoms. Symptoms are changes in the body that you can feel or notice. Unfortunately, ovarian cancer may not cause symptoms until the tumor has grown very large or has spread. The most common symptoms include:

- Feeling bloated
- Heartburn and indigestion
- Pain in the pelvis or belly (abdomen)
- Trouble eating or feeling full fast
- Feeling the need to urinate often or urgently
- Pain during sex

These symptoms can also be caused by other common health conditions. Ovarian cancer is more likely to be the cause if the symptoms are:

- New (began less than 1 year ago)
- Frequent (occurring more than 12 days each month)
- Becoming more severe over time.

Other symptoms may develop if the mass is large or if fluid builds up in your abdomen. Your doctor may be able to feel a mass by doing a pelvic or abdominal exam (described later in this chapter). The buildup of fluid is called ascites. Ascites may cause swelling of the abdomen. If your doctor suspects ovarian cancer based on your symptoms, you will have testing as described in this chapter.

Some tests are done at the initial visit, while others are done soon after a diagnosis is
made. It is helpful to ask your doctor which tests you will have and when you can expect the results. The results of certain tests and evaluations described in this chapter provide information needed to plan treatment.

Testing helps determine the clinical (pre-surgery) stage. The clinical stage provides a “best guess” of how far the cancer has spread. It is a best guess because surgery is needed in order to know exactly how much cancer is in the body.

Testing also helps determine whether you are a good candidate for surgery. Having surgery first may not be an option based on the size and location of the tumor. It may also not be a good option for those who are elderly, frail, have trouble doing daily activities, or who have other serious health conditions. If your doctor decides that having surgery first isn’t a good choice for you, see page 25.

**Biopsy**

To diagnose ovarian cancer, a sample of tissue must be removed from your body for testing. This is called a biopsy. Doctors test tumor tissue to check for cancer cells and to look at the features of the cancer cells. Most often, the biopsy is done during surgery to remove ovarian cancer.

Sometimes a biopsy is done to help diagnose ovarian cancer before surgery or other planned treatment. This may be the case if the cancer has spread too much to be removed by initial surgery. In such cases, a fine-needle aspiration (FNA) biopsy or paracentesis may be used. An FNA biopsy uses a very thin needle to remove a small sample of tissue from the tumor. For paracentesis, a long, thin needle is inserted through the skin of the belly (abdomen) to remove a sample of fluid.

The biopsy samples are sent to a pathologist for testing. A pathologist is a doctor who is an expert in testing cells to find disease. The pathologist views the samples with a microscope to look for cancer cells. If the cells are cancerous, the pathologist assesses their appearance and other features.

**Review of tumor tissue**

Sometimes ovarian cancer is confirmed by a prior surgery or biopsy performed by another doctor. In this case, your doctors will need to review all of the prior results. This includes results of the surgery, biopsy, and tests of tissue that was removed. A pathologist will examine the tumor tissue with a microscope to make sure it is ovarian cancer. Your doctors will also want to know if any cancer was left in your body after surgery. All of this will help your current doctors plan treatment.
1 Ovarian cancer basics

Abdominal and pelvic exam
Your doctor will do a physical exam of your abdomen and pelvis. This is called an abdominal and pelvic exam. For the abdominal exam, your doctor will feel different parts of your belly. This is to see if organs are of normal size, are soft or hard, or cause pain when touched. Your doctor will also feel for signs of fluid buildup (ascites) in the belly area or around the ovaries.

During the pelvic exam, your doctor will feel for abnormal changes in the size, shape, or position of your ovaries and uterus. A special widening instrument, called a speculum, will be used to view your vagina and cervix. A sample of cells may be removed for testing. This is known as a Pap test. It is used to detect cervical cancer or pre-cancer, not ovarian cancer.

Imaging tests
Imaging tests take pictures of the inside of your body. Doctors use imaging tests to check if there is a tumor in your ovaries. The pictures can show the tumor size, shape, and location. They can also show if the cancer has spread beyond your ovaries. Different types of imaging tests are used to look for ovarian cancer, plan treatment, and check treatment results.

Before the test, you may be asked to stop eating or drinking for a few hours. You may also need to remove metal objects from your body. The types of imaging tests used for ovarian cancer are described next.

Pelvic exam
During a pelvic exam, your doctor will feel for abnormal changes in the size, shape, or position of your ovaries and uterus. A special widening instrument will be used to view your vagina and cervix.
Ultrasound
Ultrasound is often the first imaging test used to look for ovarian cancer. It uses sound waves to make pictures of the inside of the body. Ultrasound is good at showing the size, shape, and location of the ovaries, fallopian tubes, uterus, and nearby tissues. It can also show if there is a mass in the ovary and whether the mass is solid or filled with fluid.

A hand-held device called an ultrasound probe is used. There are two types of ultrasounds that may be used to look for ovarian cancer—transabdominal and transvaginal.

For a transabdominal ultrasound, a gel will be spread on your abdomen and pelvis. The gel helps to make the pictures clearer. Your doctor will place the probe on your skin and guide it back and forth in the gel.

For a transvaginal ultrasound, your doctor will insert the probe into your vagina. This may help the doctor see your ovaries more clearly. Ultrasounds are generally painless, but you may feel some discomfort when the probe is inserted.

Computed tomography (CT)
A CT scan uses x-rays to take many pictures of areas inside of the body from different angles. All of the x-ray pictures are combined to make one detailed picture of the body part.

CT scans of your chest, abdomen, and/or pelvis may be given along with other initial tests to look for ovarian cancer. This type of scan is good at showing if the cancer has spread outside of the ovaries. But, it is not good at showing small tumors. A CT scan may also show if nearby lymph nodes are bigger than...
normal. This can be a sign that the cancer has spread.

A substance called contrast will be used to make the pictures clearer. Before the scan you will be asked to drink a large glass of oral contrast. A contrast agent will also be injected into your vein. This is referred to as intravenous ("IV") contrast. It may cause you to feel flushed or get hives. Rarely, serious allergic reactions occur. Tell your doctors if you have had bad (allergic) reactions to IV contrast in the past.

A CT scanner is large and has a tunnel in the middle. During the scan, you will lie face up on a table that moves through the tunnel. The scanner will rotate an x-ray beam around you to take pictures from many angles. You may hear buzzing, clicking, or whirring sounds during this time. A computer will combine all the x-ray pictures into one detailed picture.

### Magnetic resonance imaging (MRI)

An MRI scan uses radio waves and powerful magnets to take pictures of the inside of the body. It does not use radiation. This type of scan is good at showing the spine and soft tissues. An MRI scan of your abdomen and pelvis may be used to look for ovarian cancer if the ultrasound was unclear. An MRI scan of your chest may be used to look for signs of cancer spread. This test may also be used to check treatment results and to assess for cancer spread to other parts of the body.

Getting an MRI scan is similar to getting a CT scan but takes longer to complete. The full exam can take 1 hour or more. You will lie on a table that moves through a large tunnel in the scanning machine. The scan may cause your body to feel a bit warm. Like a CT scan, a contrast agent will be used to make the pictures clearer.
Ovarian cancer basics  
Testing for ovarian cancer

Positron emission tomography (PET)
In some cases, CT or MRI may be combined with PET. A PET scan shows how your cells are using a simple form of sugar. A sugar radiotracer is first put into your body with an injection into a vein. The radiotracer emits a small amount of energy that is detected by the machine that takes pictures. Active cancer cells use sugar faster than normal cells. This means that cancer cells look brighter in the pictures. PET is very good at showing small groups of cancer cells. This test may also be useful for showing if ovarian cancer has spread.

Chest x-ray
An x-ray uses small amounts of radiation to make pictures of organs and tissues inside the body. A tumor changes the way radiation is absorbed and will show up on the x-ray picture. A chest x-ray can be used to show if cancer has spread to your lungs. This test may be given with other initial tests when ovarian cancer is first suspected or found. It may also be ordered to check treatment results. A chest x-ray is fast and painless.

Diagnostic laparoscopy
If the cancer is advanced, you may have a diagnostic laparoscopy before treatment. The purpose is to learn the extent of the cancer in the abdomen. It helps your doctors decide whether surgery can be performed first, or if chemotherapy should be given first to shrink the cancer and make surgery easier. This minimally invasive procedure involves making a tiny cut in the abdomen. A thin tube with a light and a camera (laparoscope) is used to view the lining of the abdomen and the surface of organs in the abdomen. Tissue samples are taken and tested for cancer cells in a lab.

MRI
MRI makes pictures of areas inside the body without using radiation. An MRI of the abdomen and pelvis may be used to look for ovarian cancer if an ultrasound was unclear.
Family history and genetic testing
Ovarian cancer most often occurs for unknown reasons. However, about 15 out of 100 ovarian cancers are due to changes (mutations) in genes that are passed down from a parent to a child. This is called hereditary ovarian cancer.

Hereditary ovarian cancer is most often caused by mutations in 1 of 2 genes: breast cancer gene 1 (BRCA1) or breast cancer gene 2 (BRCA2). A BRCA mutation increases the risk of developing ovarian, breast, and some other cancers. Everyone has BRCA1 and BRCA2 genes. When working properly, they are helpful. They prevent abnormal cell growth by repairing damaged cells.

Another cause of hereditary ovarian cancer is Lynch syndrome, also known as hereditary nonpolyposis colorectal cancer (HNPCC) syndrome. Lynch syndrome is the most common cause of hereditary colon cancer, but can also cause ovarian and other cancers.

Ovarian cancer associated with a BRCA mutation or Lynch syndrome usually starts at a younger age than non-hereditary ovarian cancer. Using your age, health history, and family history, your doctor will assess how likely you are to have hereditary ovarian cancer.

Genetic testing can tell if you have a mutation in the BRCA genes, or in other genes that play a role in hereditary cancer. If initial treatment works well, BRCA status (whether you have a BRCA mutation) plays an important role in guiding decisions about maintenance therapy. Maintenance therapy is discussed in more detail later in this guide.

Genetic testing is recommended for everyone diagnosed with ovarian cancer. This testing may be done through your gynecology or oncology care team, or by a genetic counselor. Genetic testing is done on normal tissue–either blood, saliva, or a cheek swab. Those with a positive genetic test or who have a strong cancer family history should see a health expert. This is typically a genetic counselor. A genetic counselor has special training to help patients understand changes in genes that are related to disease. The genetic counselor can tell you more about how likely you are to have hereditary ovarian cancer.

More information on BRCA mutations is provided in the Biomarker testing section on page 17.

Nutritional and digestive tract health
While taking your medical and family history, your doctor may also ask about your diet and eating habits. Symptoms of ovarian cancer include bloating, pain in the pelvis or abdomen, difficulty eating, and feeling full quickly.

These symptoms can lead to changes in eating habits, which can affect your overall health and nutrition level. If you are eating less in general, or not eating enough healthy foods, you may not be getting enough nutrients. This can have an impact on the success of surgery and other treatment outcomes, especially in older patients. If you need help with keeping a healthy diet or have questions about your diet, ask your doctor for a referral to a registered dietitian.

Your doctor may want to evaluate your gastrointestinal (GI) tract using an imaging test. The GI tract is made of the organs that food passes through when you eat. This includes your stomach, small bowel, and large bowel (rectum and colon). An imaging tool called a scope is used to examine these
organs. A scope is a long, thin tube with a light and a camera that can be guided into your body. A colonoscopy is used to examine the large bowel. This involves inserting a scope into your anus and guiding it through the rectum and colon. To examine the upper GI tract, a scope is guided down the throat into the esophagus, stomach, and small bowel. This is called an upper endoscopy.

**Blood tests**
Doctors test blood to look for signs of disease and to assess your general health. The following tests are not used to diagnose ovarian cancer, but abnormal results may signal health problems.

A **complete blood count (CBC)** measures the number of red blood cells, white blood cells, and platelets in a sample of blood. Red blood cells carry oxygen throughout the body. White blood cells fight infection. Platelets help to control bleeding. Your blood counts may be too low or too high because of cancer or other health problems.

A **blood chemistry profile** measures the levels of different chemicals in your blood. Chemicals in your blood are affected by your kidneys, bones, and other organs and tissues. Blood chemistry levels that are too high or too low may be a sign that an organ is not working well. Abnormal levels may also be caused by the spread of cancer or by other diseases.

The liver is an organ that does many important jobs, such as remove toxins from your blood. **Liver function tests** measure chemicals that are made or processed by the liver. Levels that are too high or low may be a sign of liver damage or cancer spread.

**Tumor marker blood tests**
A tumor marker is a substance found in body tissue or fluid that may be a sign of cancer. When considered with other information, tumor markers can help diagnose ovarian cancer. They can also be used to monitor response to treatment.

CA-125 (cancer antigen-125) is the most commonly used tumor marker test for ovarian cancer. CA-125 is a protein made by normal cells and ovarian cancer cells. High levels of CA-125 in the blood may be a sign of certain cancers, including ovarian cancer.

A CA-125 test alone cannot diagnose ovarian cancer. This is because there are non-cancerous conditions that can raise your CA-125 level. Also, some ovarian cancers do not cause CA-125 to rise. But, CA-125 testing may be done along with other initial tests if your doctor suspects ovarian cancer. It may also be done during and after treatment to check treatment results.

Your blood may also be tested for the following tumor markers. These may be found in higher-than-normal amounts in people with rare ovarian tumor types, called less common ovarian cancers (LCOCs).

- Inhibin (typically inhibin A and inhibin B)
- Beta-human chorionic gonadotropin (β-hCG)
- Alpha-fetoprotein (AFP)
- Lactate dehydrogenase (LDH)
- Carcinoembryonic antigen (CEA)
- CA 19-9
Biomarker testing
Treatment options for patients with advanced or recurrent ovarian cancer may include targeted therapy or immunotherapy. Like chemotherapy, these are medicines that work throughout the body to treat cancer. Unlike chemotherapy, these newer therapies work best at treating cancers with specific features, called biomarkers.

Biomarkers can include proteins made in response to the cancer and changes (mutations) in the DNA of the cancer cells. Biomarker testing is used to learn whether your cancer has any targetable changes to help guide your treatment. If it does, targeted therapy or immunotherapy may be a treatment option if needed. The results of biomarker testing can also be used to determine whether you meet the criteria for joining certain clinical trials.

Testing for biomarker mutations involves analyzing a piece of tumor tissue in a laboratory or testing a sample of blood. Other names for biomarker testing include molecular testing, tumor profiling, genomic testing, tumor gene testing, next-generation sequencing, mutation testing, liquid biopsy, and precision oncology.

**BRCA and HRD**
A *BRCA* mutation is the most important biomarker used to plan ovarian cancer treatment. Everyone diagnosed with ovarian cancer should have their tumor tested for mutations in the *BRCA* genes and in other similar genes important in DNA repair. This is different than genetic testing of the blood for inherited (germline) *BRCA* mutations. Mutations in the tumor itself are known as somatic (or simply “tumor”) mutations.

*BRCA* mutations are a form of homologous recombination deficiency (HRD). This means that if you have a *BRCA* mutation, your cancer is, by extension, homologous recombination deficient. You may also hear the term “HRD positive” used to describe homologous recombination deficient cancers.

However, you can also be HRD positive without a *BRCA* mutation. Other changes in your tumor’s DNA can make it homologous recombination deficient. Your *BRCA* and HRD status are used to guide decisions about maintenance therapy after initial treatment. More information on maintenance therapy is provided in Part 2: Treatment guide.

**Other biomarkers**
The timing of testing for the biomarkers described next can vary. Some doctors test for these (in addition to *BRCA*) early in the treatment process. Others may only test for *BRCA* and wait to see if therapies that require specific biomarkers are needed. However, testing for these biomarkers should be performed for ovarian cancer that returns after treatment (recurrent). Testing is performed on removed tumor tissue.

In normal cells, a process called mismatch repair (MMR) fixes errors (mutations) that happen when the DNA divides and makes a copy of itself. If the MMR system isn’t working right, errors build up and cause the DNA to become unstable. This is called microsatellite instability (MSI). There are two kinds of laboratory tests for this biomarker. Depending on the method used, an abnormal result is called either microsatellite instability high (MSI-H) or mismatch repair deficient (dMMR).
The total number of mutations (changes) found in the DNA of cancer cells is known as the tumor mutational burden (TMB). If the number of mutations is higher than a specific threshold, the tumor is referred to as tumor mutational burden-high (TMB-H).

In a tumor with a neurotrophin receptor kinase (NTRK) gene fusion, a piece of the NTRK gene and a piece of another gene fuse, or join. This activates the NTRK gene in a way that causes uncontrolled cell growth. This biomarker is rare in ovarian cancer.

Another biomarker rarely found in ovarian cancer is called BRAF V600E. This mutation may cause cancer cells to grow and spread quickly. If your cancer has this mutation, treatments that target abnormal BRAF may be helpful.

Cancer care plan

Your treatment team
Treating ovarian cancer may consist of a team of gynecologic oncologists and medical oncologists. A gynecologic oncologist is an expert in surgery and chemotherapy for gynecologic cancers. A medical oncologist is a doctor who is an expert in treating cancer with drugs such as chemotherapy. A gynecologic oncologist should perform the initial surgery for ovarian cancer when possible.

Your primary care physician (PCP) can help manage any health problems that may impact or be affected by your cancer treatment. Your PCP may also help you express your feelings about treatment. Cancer treatment may be improved if your PCP is aware of and involved in your cancer care. In addition to doctors, you may receive care from nurses, nurse practitioners, physician assistants, pharmacists, social workers, and other members of the health care team. Ask to have the names and contact information of your care providers included in the treatment plan.

Cancer treatment
There is no single treatment practice that is best for all patients. There is often more than one treatment option, including clinical trials. Clinical trials study the safety and effectiveness of investigational treatments.

The treatment that you and your doctors agree on should be reported in the treatment plan. It is also important to note the goal of treatment and the chance of a good treatment outcome. All known side effects should be listed. The time required to treat them should also be noted.

Your treatment plan may change because of new information. You may change your mind about treatment. Tests may find new results. How well the treatment is working may change. Any of these changes may require a new treatment plan.

Stress and symptom control
Cancer and its treatment can cause bothersome symptoms. The stress of having cancer can also cause symptoms. There are ways to treat many symptoms, so tell your treatment team about any that you have.

Anxiety and depression are common among people with cancer. At your cancer center, cancer navigators, social workers, and other experts can help. Help can include support groups, talk therapy, or medication. Some
Supportive care
Supportive care is treatment given to relieve the symptoms of cancer or the side effects of cancer treatment. It aims to relieve discomfort and improve quality of life. Supportive care may be given alone or in combination with cancer treatment.

Advance care planning
Talking with your doctor about your prognosis can help with treatment planning. If the cancer cannot be controlled or cured, a care plan for the end of life can be made. There are many benefits to advance care planning, including:

- Knowing what to expect
- Making the most of your time
- Lowering the stress of caregivers
- Having your wishes followed
- Having a better quality of life
- Getting good care

Advance care planning starts with an honest talk between you and your doctors. You don’t have to know the exact details of your prognosis. Just having a general idea will help with planning. With this information, you can decide at what point you will want to stop chemotherapy or other treatments, if at all. You can also decide what treatments you will want for symptom relief, such as surgery or medicine.

Another part of the planning involves hospice care. Hospice care does not include treatment to fight the cancer but rather to reduce symptoms caused by cancer. Hospice care may be started because you aren’t interested in more cancer treatment, no other cancer treatment is available, or because you may be too sick for cancer treatment.

Hospice care allows you to have the best quality of life possible. Care is given all day, every day of the week. Hospice care is most often given at home, but will sometimes be at a hospice center. One study found that patients and caregivers had a better quality of life when hospice care was started early.

An advance directive describes the treatment you’d want if you weren’t able to make your wishes known. It also can name a person whom you’d want to make decisions for you. It is a legal paper that your doctors have to follow. It can reveal your wishes about life-sustaining machines, such as feeding tubes. It can also include your treatment wishes if your heart or lungs were to stop working. If you already have
an advance directive, be sure it is shared with your oncology care team. Provide them with a copy so that it is included in your chart. It may need to be updated to be legally valid.

Key points

- The ovaries are a pair of organs that make hormones and eggs for sexual reproduction.
- Ovarian cancer often starts in the cells that form the outer layer of tissue around the ovaries. This is called epithelial ovarian cancer.
- The most common types of epithelial ovarian cancer are high-grade serous carcinoma and high-grade endometrioid carcinoma. These tumor types are the focus of this patient guide.
- Symptoms of ovarian cancer include bloating, heartburn, indigestion, pain in the belly or pelvis, trouble eating, and needing to urinate often or urgently.
- Testing for suspected ovarian cancer includes a physical examination, imaging tests, general blood tests, and tumor marker tests that are used to plan treatment for ovarian cancer.
- Genetic testing is recommended for everyone diagnosed with ovarian cancer.
- Hereditary ovarian cancer is most often caused by mutations in the BRCA1 and BRCA2 genes. Families with a history of Lynch syndrome may also be at risk for ovarian and other cancers.
- High levels of CA-125 in the blood may be a sign of ovarian cancer. You may have a CA-125 blood test if ovarian cancer is suspected.
- If the CA-125 level is high before treatment, it will likely be monitored during and after treatment.
- Biomarker testing looks for unique features of a cancer, such as tumor mutations, that can help guide your treatment.
- Treating ovarian cancer takes a team of experts. Gynecologic oncologists and medical oncologists often work together to plan the best treatment for ovarian cancer.
- Your treatment plan should include a schedule of follow-up cancer tests, monitoring and treatment of long-term side effects, and care of your general health.
2
Treatment guide

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Most ovarian cancers are treated with surgery and chemotherapy. When possible, surgery is done first. Sometimes chemotherapy is done first to shrink the tumors and make surgery easier. If this treatment works well, maintenance therapy may be used after chemotherapy for more advanced cancers. It can delay or lower the risk of recurrence.

## Surgery

Surgery is the recommended first treatment for ovarian cancer if you are willing and able to have it. Ovarian cancer surgery should be performed by a gynecologic oncologist. This is a surgeon who is an expert in cancers that start in the female reproductive organs. If you cannot have surgery first, see page 25.

A main goal of surgery is to remove all or as much of the cancer as possible. This involves removing the tumor as well as other organs and tissues where cancer cells have or might have spread. Another goal of surgery is to learn how far the cancer has spread. While testing before surgery provides an idea of how far the cancer may have spread, surgery is needed to know the true extent of the cancer.

### Types of ovarian cancer surgery

The most commonly used surgery is hysterectomy and bilateral salpingo-oophorectomy (BSO). A hysterectomy is surgery to remove the uterus. When the cervix is removed in addition to the uterus, it is called a “total” or “complete” hysterectomy. A BSO removes both ovaries and both fallopian tubes.

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**Hysterectomy and BSO**

The most commonly used surgery for ovarian cancer removes the uterus, both ovaries, and both fallopian tubes.
Pregnancy is not possible after a hysterectomy. Fertility-sparing surgery (described below) may be an option for some very early ovarian cancers that have not spread beyond the ovaries.

If cancer has spread outside the ovaries, your surgeon will attempt to remove as much of it as possible. This is called debulking or cytoreductive surgery. The extent of the surgery depends on how far the cancer has spread. It may involve removing all or part of nearby organs such as the liver, spleen, stomach, gallbladder, pancreas, intestines, appendix, and bladder. Lymph nodes that look abnormal or are larger than normal will also be removed if possible.

Fertility-sparing surgery
Pregnancy is not possible after the uterus is removed. If you are of child-bearing age, this can be hard to accept. Fertility-sparing surgery may be an option. In fertility-sparing surgery, one or both ovaries and fallopian tubes are removed, but the uterus is left in place. Surgery to remove one ovary and one fallopian tube is called a unilateral salpingo-oophorectomy (USO). USO is only an option if the cancer is only in one ovary. After a USO, you may still be able to become pregnant naturally if you haven’t entered menopause.

If the cancer is in both ovaries, a BSO (without hysterectomy) may be an option. While you cannot become pregnant naturally after a BSO, pregnancy may be possible using assisted reproductive approaches. One such approach is in vitro fertilization (IVF). In IVF, eggs are fertilized with sperm in a lab to create embryos. The embryos are implanted into the uterus or frozen for future use. The eggs used for IVF may be yours (removed from your ovary before surgery) or donor eggs. Donor eggs are removed from women who have volunteered to go through hormone treatment to stimulate egg production in the ovaries.

Surgery methods
A laparotomy is the most common and preferred method for ovarian cancer surgery. A laparotomy is a long surgical cut in the abdomen. It is often an up-and-down (vertical) cut from the top of the belly button down to the pelvic bone. This lets your doctor see the tumor and other organs and tissues in your abdomen and pelvis. This method is recommended when surgical staging (described next) or debulking surgery is planned.

Less often, a minimally invasive type of surgery called laparoscopy may be used. Laparoscopy uses a few small cuts in the abdomen. Small tools are inserted through the cuts to perform the surgery. One of the tools is called a laparoscope. It is a long tube with a light and camera at the end. The camera lets your doctor see the ovaries and other tissues in the abdomen. The other tools are used to remove tissue.

Laparoscopy may be used in select cases, such as when cancer is only in the ovaries. It is rarely used when cancer has spread outside the ovaries. This surgery should only be done by a gynecologic oncologist experienced in this method.

Surgical staging
Regardless of the type of surgery you have, surgical staging should be performed. This involves taking samples during surgery from organs and tissues where ovarian cancer often
spreads. The samples are tested for cancer cells.

Your surgeon will also take samples from nearby tissues where it looks like cancer hasn’t spread. This is done to check for cancer cells that have spread outside the ovaries or pelvis and can only be seen with a microscope. These are called microscopic metastases.

Some or all of the omentum and nearby lymph nodes will be removed. The omentum is the fatty layer of tissue that covers organs in the belly (abdomen). Lymph nodes are groups of disease-fighting cells. If there is fluid buildup in the abdomen (ascites), the fluid will also be sampled. If you do not have ascites, your doctor may “wash” the space inside your belly (peritoneal cavity) with a special liquid. This is called a peritoneal washing. Samples of the liquid will then be tested for cancer cells.

Surgical staging is the most complete and accurate way to stage ovarian cancer. The pathologic (post-surgery) stage is based on the results of surgery and tests of tissue removed during surgery. The pathologic stage provides the most accurate picture of how far the cancer has spread. Staging is discussed on page 27.

Preparing for surgery
Your treatment team will give you instructions on how to prepare for surgery. You may be asked to stop taking some medicines for a short time. You also should not eat or drink after midnight the night before the surgery.

On the day of your surgery, you will be given medicine to put you into a deep sleep so you won’t feel pain. This is called general anesthesia. Surgery may take 3 or more hours to complete. More or less time may be needed depending on how much tissue is removed.

After the surgery, expect to stay in the hospital for a few days or weeks to recover. You may feel some pain and tenderness in your belly and pelvis. It may last for a few days or weeks. You may be able to return to normal activities in a few weeks. The time it takes to fully recover varies from person to person. It also varies depending on the extent of the surgery.

Risks and side effects of surgery
With any type of surgery, there are health risks and side effects. Common side effects of any surgery include pain, swelling, and scars. Common side effects of ovarian cancer surgery include leg swelling, trouble urinating, and constipation.

If you have not entered menopause, surgery that removes both ovaries will cause menopause. Menopause is when menstruation (your period) stops permanently. When caused by surgery, menopause symptoms may be sudden and more severe. Symptoms include hot flashes, changes in mood, trouble sleeping, vaginal dryness, weight gain, and night sweats.

Cancer and recent abdominal surgery are risk factors for developing blood clots, also known as deep vein thrombosis (DVT). Many patients are placed on blood thinners (either oral medications or injections) for up to 4 weeks after surgery to help prevent blood clots.

All of the side effects of ovarian cancer surgery are not listed here. Ask your treatment team for a full list of possible side effects. If a side effect bothers you, tell your treatment team. There may be ways to help you feel better.
If surgery first is not an option

Having surgery first may not be an option because of the size and location of the tumor. Surgery first may also not be a good option if you are elderly, frail, have trouble doing daily activities, or have other serious health conditions. In this case, chemotherapy is given first to try to shrink the cancer before surgery. The medical name for this is neoadjuvant chemotherapy. It is important that a gynecologic oncologist is involved in this treatment decision.

You will likely have a biopsy to confirm ovarian cancer before starting chemotherapy. If you have not yet had a referral for genetic risk evaluation and \( BRCA1/2 \) testing, these may be ordered now.

Platinum-based chemotherapy is recommended. The same regimens used after surgery are also options for chemotherapy before surgery. See Guide 1 on page 33.

After a few cycles of chemotherapy, your doctor will check the status of the cancer to see how well chemotherapy worked and if surgery is an option. The goal of surgery is to remove as much of the cancer as possible, as well as the ovaries, fallopian tubes, and uterus. Surgery performed after chemotherapy is called interval debulking surgery (IDS).

For stage III disease, a chemotherapy technique called hyperthermic intraperitoneal chemotherapy (HIPEC) may be used during IDS. HIPEC is a newer technique in which cisplatin (a chemotherapy) is warmed and then put into the space between the organs of the abdomen during surgery.

If cancer improves after several cycles of chemotherapy, surgery is recommended. If cancer stays the same, your doctor may recommend proceeding with surgery or continuing chemotherapy to see if there is improvement. If there is, you would then have surgery. After surgery, you will have more chemotherapy followed by maintenance therapy. See page 36 for information on maintenance therapy.

If the cancer grows or spreads (progresses), it is called persistent disease. Treatment for persistent cancer is similar to treatment for recurrent cancer. See Persistent or recurrent cancer on page 39.

"The best advice that I could offer someone facing an illness is to stay positive no matter how much it tears you down, fight for the life you deserve, and please be pro-active because no one at any age, class, or race is invincible to cancer, disease, and illness."

– Christa
Ovarian cancer survivor
Ovarian cancer stages

The information gained during surgery and surgical staging is used to determine the pathologic (post-surgery) stage. The pathologic stage provides the most accurate picture of how far the cancer has spread. It is used to guide treatment after surgery.

A staging system is a standard way of describing the extent of cancer in the body. There are 2 staging systems for ovarian cancer. One was developed by the American Joint Committee on Cancer (AJCC), the other by the International Federation of Gynecology and Obstetrics (FIGO). They are very similar but the FIGO system is used most often.

In the FIGO system, the cancer stage is defined by 3 main areas of cancer growth:

- The extent of the first (primary) tumor
- The spread of cancer to nearby lymph nodes
- The spread of cancer to distant sites

Ovarian cancer stages are numbered from 1 to 4. Doctors write the stages as stages as I, II, III, and IV. The stages are also divided into smaller groups. This helps to describe the extent of cancer in more detail. The FIGO stages of ovarian cancer are described on the following pages.

Ovarian cancers of the same stage tend to have a similar prognosis. A prognosis is the likely or expected course and outcome of a disease. Earlier cancer stages tend to have better outcomes. Other factors not used for cancer staging, such as your general health, are also important.
**Stage 1**
Cancer is in one or both ovaries. It has not spread to any other organs or tissues in the body.

**Stage 1A**
Cancer is in one ovary. The outer sac (capsule) of the ovary is intact. There is no cancer on the outside surface of the ovary. No cancer cells are found in ascites or washings.

**Stage 1B**
Cancer is in both ovaries. The capsules are intact and there is no cancer on the outside surface of the ovaries. No cancer cells are found in ascites or washings.

**Stage 1C**
Cancer is in one or both ovaries and one or more of the following has also happened:

- Stage 1C1 – The capsule of the ovary broke open (ruptured) during surgery. This is called surgical spill.
- Stage 1C2 – The capsule of the ovary ruptured before surgery, or there is cancer on the outer surface of the ovary or fallopian tube.
- Stage 1C3 – Cancer cells are found in ascites or washings.
Stage 2
Cancer is in one or both ovaries and has spread to other organs or tissues within the pelvis. Cancer has not spread outside the pelvis or to any lymph nodes.

Stage 2A
Cancer has grown into and/or spread implants on the uterus and/or fallopian tubes.

Stage 2B
Cancer has grown into and/or spread implants on other organs or tissues in the pelvis. This may include the bladder, colon, rectum, or the peritoneum within the pelvis. The peritoneum is the tissue that lines the inside of the abdomen and pelvis and covers most organs in this space.
Stage 3
Cancer is in one or both ovaries and has spread outside the pelvis to tissues in the abdomen.

Stage 3A1
Cancer has spread outside the pelvis, but only to lymph nodes in the back of the abdomen—called retroperitoneal lymph nodes.

- Stage 3A1 (i) – Cancer in the lymph nodes is 10 mm (millimeters) or smaller.
- Stage 3A1 (ii) – Cancer in the lymph nodes is larger than 10 mm.

Stage 3A2
Cancer has spread to the tissue lining the abdomen. The cancer is so small it can only be seen with a microscope. There may also be cancer in lymph nodes in the back of the abdomen.
Stage 3B
Cancer has spread to the tissue lining the abdomen. It can be seen without a microscope. The areas of cancer spread are 2 cm (centimeters) or smaller. There may also be cancer in lymph nodes in the back of the abdomen.
Stage 3C
Cancer has spread to the tissue lining the abdomen. It can be seen without a microscope. The areas of cancer spread are larger than 2 cm. Cancer may have spread to lymph nodes in the back of the abdomen. It may have also spread to the outer surface of the liver or spleen.
**Stage 4**
Cancer has spread to other parts of the body, such as the liver, lungs, or brain.

**Stage 4A**
There are cancer cells in the fluid around the lungs. This is called a malignant pleural effusion.

**Stage 4B**
Cancer has spread to the inside of the liver or spleen, to distant lymph nodes, or to other organs outside the abdomen.
Chemotherapy after surgery

Chemotherapy is the use of medicine(s) to kill cancer cells. It is a type of systemic therapy. The term systemic therapy is used to describe a medicine that works throughout the body or “system-wide.” When given after surgery, chemotherapy is known as adjuvant treatment. Your doctor may also call it primary chemotherapy.

Chemotherapy is recommended after surgery for most newly diagnosed stage I cancers. Observation may be an option for a stage IA or IB, grade 2 endometrioid tumor. Ask your doctor if this applies to your cancer. Chemotherapy is recommended after surgery for all newly diagnosed stage II, III, and IV ovarian cancers.

Platinum-based chemotherapy is recommended for ovarian cancer. These medicines contain the metal platinum. Carboplatin, cisplatin, and oxaliplatin are platinum chemotherapies. Carboplatin is the most commonly used of the three to treat ovarian cancer. A platinum drug is often given with a different type of chemotherapy drug called a taxane to treat ovarian cancer. Paclitaxel and docetaxel are taxanes.

A drug called bevacizumab (Avastin) may be added to chemotherapy after surgery for stage II, III, and IV ovarian cancers. Bevacizumab stops new blood vessels that “feed” tumors from forming. This can stop the tumor from growing by starving it.

The chemotherapy regimens currently recommended for use after surgery are shown in Guide 1.

Chemotherapy is given in cycles. A cycle includes days of treatment followed by days of rest. This allows the body to recover before the next treatment. The cycles vary in length depending on which drugs are used. Often, the cycles are 7, 14, 21, or 28 days long.

Guide 1
Chemotherapy regimens used after surgery

| Paclitaxel and carboplatin (a preferred option for all stages) |
| Paclitaxel, carboplatin, and bevacizumab (a preferred option for stage II, III, or IV cancers) |
| Docetaxel and carboplatin |
| Carboplatin and liposomal doxorubicin |
| Paclitaxel and cisplatin* (may be used for some stage II or III cancers) |

*This regimen involves both intravenous (IV) and intraperitoneal (IP) chemotherapy
For stage I cancers, at least 3 but up to 6 cycles are given. The number of cycles you receive depends on the tumor type and other features of the tumor. Six cycles are recommended for high-grade serous tumors. Three to 6 cycles are recommended for all other stage I tumor types. For stage II, III, and IV cancers, 6 cycles of chemotherapy are recommended.

The regimen that is best for you depends on a number of factors. This includes your age, overall health, and performance status. Performance status is a rating of how well you are able to do daily activities. Another key factor is your risk for peripheral neuropathy. This is a nerve problem that causes pain, tingling, and numbness, often in the hands and feet. Neuropathy is a common side effect of paclitaxel and, to a lesser degree, carboplatin. If you have a high risk for nerve problems, docetaxel and carboplatin may be a good option for you.

**How chemotherapy is given**

Most of the chemotherapy regimens for ovarian cancer are given intravenously, meaning the medicine is put directly into your bloodstream through a vein. This is called an IV infusion. You will likely get a port to receive chemotherapy. A port is a small, round disc that is usually placed in the chest. It is inserted during a minor surgery and stays in your body until treatment is complete. Once the port is removed, the skin will heal.

Chemotherapy medicine can also be slowly injected into the abdomen (peritoneal cavity). This is called intraperitoneal (IP) chemotherapy. When given this way, higher doses of the drugs are delivered directly to the cancer cells in the belly area. IP chemotherapy is given through a thin tube called a catheter. The catheter is usually connected to a port placed inside the abdomen during surgery.

**Monitoring during chemotherapy**

Your doctor will monitor how well the chemotherapy is working and assess for side effects. The ways you may be monitored are listed below.

- A physical exam should be done every 1 to 3 cycles. A pelvic exam may be done at the same time.
- Complete blood count (CBC) and chemistry profile (as needed)
- Testing of CA-125 or other tumor markers (as needed prior to each cycle of chemotherapy)
- Imaging tests (as needed)
Side effects of chemotherapy
The side effects of chemotherapy depend on many factors. The drug, the dose, and the person all play a role. In general, side effects are caused by the death of fast-growing cells, which are found in the bowel, mouth, and blood. As a result, common side effects include:

- Loss of appetite
- Nausea
- Vomiting
- Mouth sores
- Hair loss
- Fatigue
- Low blood cell counts
- Increased risk of infection
- Bleeding or bruising easily
- Nerve damage (neuropathy)

Some side effects are more likely or more severe when certain regimens are used. The docetaxel and carboplatin regimen is more likely to increase the risk of infection. The paclitaxel and carboplatin regimen is more likely to cause neuropathy. Side effects also differ depending on how chemotherapy is given. IP chemotherapy tends to cause more severe side effects than IV chemotherapy. This includes infections, kidney damage, pain in the belly, and nerve damage.

Not all side effects of chemotherapy are listed here. Be sure to ask your treatment team for a full list of common and rare side effects of the drugs you receive. If a side effect bothers you, tell your treatment team. There may be ways to help you feel better.

Treatment response and next steps
Most stage I cancers do not need further treatment after chemotherapy. The next step is surveillance. See page 38.

For stage II, III, and IV cancers, the next step depends on how well chemotherapy worked. The possible outcomes of treatment are described next.

- **Complete response**: there are no signs of cancer on imaging tests, physical exam, or CA-125 blood tests.
- **Partial response**: tests show a decrease in the amount of cancer, tumor size, or CA-125 levels. The cancer improved but is not completely gone.
- **Stable disease**: the cancer did not get better or worse during treatment.
- **Progression**: the cancer continued to grow (progress) during or after treatment.

Complete or partial response
For many stage II, III, and IV cancers that have a complete or partial response to platinum-based chemotherapy, maintenance therapy is the next step. See the following page for information on maintenance therapy.

Stable disease or progression
If the cancer does not improve or gets worse, see Persistent or recurrent cancer on page 39.
Maintenance therapy

Maintenance therapy is the use of chemotherapy or targeted therapy after successful initial treatment for ovarian cancer. It can reduce the risk of cancer returning or extend the time until it returns or gets worse. Maintenance therapy is an option for stage II, III, and IV cancers that respond well or very well to surgery and platinum-based chemotherapy.

Your options for maintenance therapy depend on:

- Whether you have a BRCA mutation or are HRD positive
- Whether chemotherapy after surgery included bevacizumab

PARP inhibitors

Oral targeted therapies called PARP inhibitors are a newer option for maintenance therapy after initial treatment. Poly ADP-ribose polymerase (PARP) is an enzyme, or protein, that helps repair damaged DNA in cancer cells. Blocking PARP enzymes from fixing cancer cells damaged by chemotherapy allows the cancer cells to die.

PARP inhibitors work best in HRD-positive cancers, which includes cancers caused by a BRCA mutation. These cancers have faulty DNA repair systems, which leads to PARP enzymes stepping in to do the repairs. Blocking the PARP enzymes stops the repairs. PARP inhibitors currently used for maintenance therapy after initial treatment of ovarian cancer include:

- Olaparib (Lynparza)
- Niraparib (Zejula)

Side effects of PARP inhibitors

The most common side effects of PARP inhibitors are similar to those caused by chemotherapy and include fatigue, nausea, vomiting, and low blood cell counts. Rare but serious side effects include myelodysplastic syndrome (MDS) and acute myeloid leukemia (AML). MDS is a type of cancer in which the bone marrow does not make enough healthy blood cells and there are abnormal cells in the blood and/or bone marrow. AML is a fast-growing disease in which too many immature white blood cells are found in the bone marrow and blood. In some cases MDS can become AML.

Bevacizumab

Some chemotherapy regimens given after surgery include the targeted therapy bevacizumab (Avastin). If you are a candidate for maintenance therapy, it means that chemotherapy that included bevacizumab worked well. In this case, bevacizumab can...
be given by itself as maintenance therapy. It may also be given in combination with a PARP inhibitor.

**Determining your options**

**Bevacizumab was included in chemotherapy**
If you have a *BRCA* mutation and chemotherapy included bevacizumab, maintenance therapy with both bevacizumab and olaparib is recommended. Treatment with a PARP inhibitor alone is also an option. Research suggests that bevacizumab and olaparib together work better than bevacizumab alone for people with a *BRCA* mutation.

Maintenance therapy with bevacizumab and olaparib together is also recommended for those without a known *BRCA* mutation but who are HRD positive. If the HR status is normal or unknown, bevacizumab alone may be recommended.

**Bevacizumab was not included in chemotherapy**
If you have a *BRCA* mutation and chemotherapy did not include bevacizumab, maintenance therapy with a PARP inhibitor alone is recommended. Observation may be considered for some stage II cancers with a *BRCA* mutation.

If you do not have a *BRCA* mutation (or have not had a *BRCA* test), maintenance therapy with niraparib may be an option, especially if you are HRD positive. Observation is also an option if you had a complete response to chemotherapy. A complete response means there are no signs of cancer in the body.

**How long does maintenance therapy last?**
The length of maintenance therapy after initial treatment depends on the specific drug(s). Olaparib can be given for up to 2 years. Niraparib can be given for up to 3 years. When given with olaparib, bevacizumab can be given for up to 15 months. **However, any maintenance therapy will be stopped if one of the following occurs:**

- The cancer grows or spreads
- The side effects become intolerable or make it unsafe to continue
Surveillance

Surveillance begins when there are no signs of cancer after treatment. It is used to find early signs that cancer has come back.

When treatment is over, you will continue to see your cancer doctor on a regular basis. Expect to see your doctor every 2 to 4 months in the first 2 years after treatment. During the following 3 years, the visits are spaced out to every 3 to 6 months. After that, 1 visit per year is recommended.

Many of the tests are only done on an as-needed basis. This means that your doctor will decide whether you need a particular test based on your symptoms (if any) and other factors.

The recommended follow-up schedule and the tests that may be used to monitor for the return of ovarian cancer are listed in Guide 2.

In addition to surveillance testing, a range of other care is important for cancer survivors. See Part 3: Survivorship for more information.

### Guide 2
Follow-up care after treatment for all stages

<table>
<thead>
<tr>
<th>Schedule of follow-up visits</th>
<th>Follow-up tests and other care</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First 2 years:</strong> Every 2 to 4 months</td>
<td>Pelvic exam and physical exam</td>
</tr>
<tr>
<td><strong>Next 3 years:</strong> Every 3 to 6 months</td>
<td>Imaging of the chest, abdomen, and pelvis (as needed)</td>
</tr>
<tr>
<td><strong>After 5 years:</strong> Once a year</td>
<td>CBC and blood chemistry profile (as needed)</td>
</tr>
<tr>
<td></td>
<td>CA-125 blood test or other tumor markers (if levels were high originally)</td>
</tr>
<tr>
<td></td>
<td>Referral for genetic risk evaluation (if not already done)</td>
</tr>
<tr>
<td></td>
<td>Long-term wellness care</td>
</tr>
</tbody>
</table>
Persistent or recurrent cancer

The return of cancer after treatment is called a recurrence, or a relapse. Symptoms of ovarian cancer could be a sign of recurrence. Tell your care team if you have pain or bloating in your pelvis or belly, unexplained weight loss, upset stomach, constipation, trouble eating or feeling full fast, fatigue, or you need to urinate often or urgently.

If the level of CA-125 in your blood was high originally, it will likely be monitored during surveillance. Your doctor may suspect that cancer has returned if your CA-125 level is going up. More information on a rising CA-125 level is provided below.

If recurrence is suspected, imaging tests may be ordered to confirm or rule it out. The presence of specific biomarkers helps guide treatment for recurrent ovarian cancer. If testing for the following biomarkers has not already been done, it is recommended now:

- **BRCA1 and BRCA2 mutations**
- Homologous recombination deficiency (HRD)
- Microsatellite instability/mismatch repair (MSI/MMR)
- Tumor mutational burden (TMB)
- **BRAF** mutations
- **NTRK** gene fusions

See page 17 for more information on these biomarkers.

Everyone with persistent or recurrent ovarian cancer is encouraged to consider a clinical trial for treatment. Treatment with an investigational drug or combination of drugs may provide benefit.

Supportive care is an option for everyone with ovarian cancer, whether you are in active treatment or not. Supportive care can help relieve the symptoms of cancer and the side effects of treatment. It aims to relieve discomfort and improve quality of life.

Rising CA-125 levels

If your CA-125 levels are going up after treatment with surgery and chemotherapy, but there are no other signs of recurrence, treatment does not need to be started right away. It is safe to wait until you have symptoms or other signs of recurrence. Starting treatment right away does not always lead to better outcomes. In some cases, however, your doctor may prefer not to delay treatment.

If your CA-125 levels are rising or you have symptoms of recurrence and you did not yet have chemotherapy, the cancer is treated the same as if you were newly diagnosed. This means that you will have surgery to remove the cancer followed by chemotherapy. The type and extent of surgery depends on how far the cancer has spread.

Platinum-resistant cancer

Ovarian cancer is referred to as platinum-resistant if:

- It does not improve or worsens during platinum-based chemotherapy
- It returns less than 6 months after successful treatment with platinum-based chemotherapy
Because platinum-based chemotherapy did not work very well, a different type of drug is recommended for recurrence treatment. There are many non–platinum-based chemotherapy regimens that may be used. Talk to your doctor about which is right for you.

Other options for systemic therapy may include a PARP inhibitor, endocrine therapy, targeted therapy, and immunotherapy. These are described in more detail on the next pages. Talk to your doctor about any clinical trials you may be eligible for at this time.

**Platinum-sensitive cancer**

If you enter complete remission after platinum-based chemotherapy and cancer returns more than 6 months later, the cancer is considered platinum-sensitive. This means that platinum-based chemotherapy drugs work well against the cancer.

Because it worked well before, platinum chemotherapy is typically recommended for recurrent platinum-sensitive disease. This is especially true if it is the first recurrence. The targeted therapy bevacizumab may be added to chemotherapy. Your doctor may want to do surgery to remove all visible cancer before beginning recurrence treatment. This is called cytoreductive surgery.

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**Hypersensitivity reactions**

With repeat use of carboplatin and/or cisplatin, you are at increased risk of a hypersensitivity (allergic) reaction. This can be life-threatening. If your treatment team hasn’t brought it up, below are some questions you can ask to get more information about this risk.

- How likely is it that I will have an allergic reaction to chemotherapy?
- How will I know if I’m having an allergic reaction? What are the symptoms?
- Does the staff on hand know how to manage hypersensitivity reactions?
- Will the right medical equipment be available in case I have an allergic reaction?
Maintenance therapy
If recurrence treatment with platinum-based chemotherapy works well or very well, maintenance therapy is an option. Bevacizumab may have been included in your recurrence chemotherapy regimen. If so, it can be continued as maintenance therapy. A PARP inhibitor may also be an option for maintenance therapy, if you have not already been treated with one. This option is recommended for patients with a BRCA mutation. After successful chemotherapy for recurrent cancer, maintenance therapy with a PARP inhibitor can be continued until one of the following occurs:

- The cancer grows or spreads
- The side effects become intolerable or make it unsafe to continue

Other options for recurrence treatment

PARP inhibitor
A PARP inhibitor may be an option for recurrence treatment. It will be considered if you have already received at least 2 lines of chemotherapy and have a BRCA mutation or are HRD positive. At this time, the PARP inhibitor preferred for recurrence therapy is niraparib.

Targeted therapy
The targeted therapies larotrectinib (Vitrakvi) and entrectinib (Rozlytrek) are options for NTRK gene fusion-positive ovarian tumors.

For ovarian tumors with the BRAF V600E mutation, dabrafenib (Tafinlar) and trametinib (Mekinist) together is a recommended treatment option.

Immunotherapy
The immune system is your body’s natural defense against infection and disease. Immunotherapy increases the activity of your immune system. By doing so, it improves your body’s ability to find and destroy cancer cells.

The following immunotherapy drugs may be used to treat recurrent or advanced ovarian cancer:

- Pembrolizumab (Keytruda)
- Dostarlimab-gxly (Jemperli)

They are immune checkpoint inhibitors. Treatment with either may be an option if your cancer is MSI-H/dMMR. Pembrolizumab is also used for cancers with a high tumor mutational burden (TMB). See page 17 for more information on these biomarkers.

For more information on the side effects of immune checkpoint inhibitors, see the NCCN Guidelines for Patients Immunotherapy Side Effects: Immune Checkpoint Inhibitors at NCCN.org/patientguidelines.

Endocrine therapy
Estrogen and progesterone are hormones made by the ovaries. They help some ovarian
cancers grow. Some patients are prescribed hormones after they become menopausal to help with symptoms of menopause, such as hot flashes. This treatment with hormones, known as hormonal replacement therapy or “HRT,” may help some cancers grow.

In some cases treatment can be used to block these hormones from working, or to lower hormone levels. The goal is to help slow ovarian cancer growth. This is called endocrine therapy or anti-estrogen therapy. It may be used for persistent or recurrent ovarian cancer.

Different types of endocrine therapy drugs work in different ways. Those that may be used for ovarian cancer are described next.

- Tamoxifen is an anti-estrogen. It stops the effect of estrogen on cancer cell growth. It is taken by mouth.
- Anastrozole, exemestane, and letrozole are aromatase inhibitors. They lower estrogen levels in the body. These are taken by mouth.
- Leuprolide acetate is a luteinizing hormone-releasing hormone (LHRH). It causes the ovaries to make less estrogen and progesterone. It is given by injection.
- Megestrol acetate is a progestin. It stops the effect of estrogen on cancer cell growth. It is taken by mouth.

Endocrine therapy can cause a number of side effects. Symptoms of menopause are common and include:

- Hot flashes
- Changes in mood
- Vaginal dryness
- Trouble sleeping
- Night sweats

Other common side effects of endocrine therapy are vaginal discharge, weight gain, swelling in the hands and feet, fatigue, and less interest in sex. Blood clots are a rare but serious side effect of tamoxifen. Aromatase inhibitors can weaken your bones and may also cause joint and muscle pain.

Radiation therapy to help with symptoms

Depending on the specific recurrence treatment planned, radiation therapy may also be given to help with symptoms. This is known as palliative radiation therapy. Radiation treatment to the pelvis can cause the vagina to become shorter and narrower. This is called vaginal stenosis.

Vaginal stenosis can make it uncomfortable or even painful to have sex, or to have vaginal examinations by a doctor. Vaginal dilator therapy can be used to prevent or treat vaginal stenosis. A vaginal dilator is a device used to gradually stretch or widen the vagina. You can start using a dilator as soon as 2 to 4 weeks after radiation therapy has ended. You can continue to use it for as long as you want.
Clinical trials

A clinical trial is a type of medical research study. After being developed and tested in a laboratory, potential new ways of fighting cancer need to be studied in people. If found to be safe and effective in a clinical trial, a drug, device, or treatment approach may be approved by the U.S. Food and Drug Administration (FDA).

Everyone with cancer should carefully consider all of the treatment options available for their cancer type, including standard treatments and clinical trials. Talk to your doctor about whether a clinical trial may make sense for you.

Phases
Most cancer clinical trials focus on treatment. Treatment trials are done in phases.

- **Phase I** trials study the dose, safety, and side effects of an investigational drug or treatment approach. They also look for early signs that the drug or approach is helpful.
- **Phase II** trials study how well the drug or approach works against a specific type of cancer.
- **Phase III** trials test the drug or approach against a standard treatment. If the results are good, it may be approved by the FDA.
- **Phase IV** trials study the long-term safety and benefit of an FDA-approved treatment.

Finding a clinical trial

**In the United States**

NCCN Cancer Centers
NCCN.org/cancercenters

The National Cancer Institute (NCI)
cancer.gov/about-cancer/treatment/
clinical-trials/search

**Worldwide**

The U.S. National Library of Medicine (NLM)
clinicaltrials.gov

Need help finding a clinical trial?
NCI’s Cancer Information Service (CIS)
1.800.4.CANCER (1.800.422.6237)
cancer.gov/contact
Who can enroll?
Every clinical trial has rules for joining, called eligibility criteria. The rules may be about age, cancer type and stage, treatment history, or general health. These requirements ensure that participants are alike in specific ways and that the trial is as safe as possible for the participants.

Informed consent
Clinical trials are managed by a group of experts called a research team. Clinical trials are required to be reviewed and approved by an independent group called an Investigational Review Board (IRB). The research team will review the study with you in detail, including its purpose and the risks and benefits of joining. All of this information is also provided in an informed consent form. Read the form carefully and ask questions before signing it. Take time to discuss with family, friends, or others you trust. Keep in mind that you can leave and seek treatment outside of the clinical trial at any time.

Start the conversation
Don’t wait for your doctor to bring up clinical trials. Start the conversation and learn about all of your treatment options. If you find a study that you may be eligible for, ask your treatment team if you meet the requirements. Try not to be discouraged if you cannot join. New clinical trials are always becoming available.

Frequently asked questions
There are many myths and misconceptions surrounding clinical trials. The possible benefits and risks are not well understood by many with cancer.

Will I get a placebo? Placebos (inactive versions of real medicines) are almost never used alone in cancer clinical trials. It is common to receive either a placebo with a standard treatment, or a new drug with a standard treatment. You will be informed, verbally and in writing, if a placebo is part of a clinical trial before you enroll.

Are clinical trials free? There is no fee to enroll in a clinical trial. The study sponsor pays for research-related costs, including the study drug. You may, however, have costs indirectly related to the trial, such as the cost of transportation or child care due to extra appointments. During the trial, you will continue to receive standard cancer care. This care is billed to—and often covered by—insurance. You are responsible for copays and any costs for this care that are not covered by your insurance.
Key points

- Surgery is the recommended first treatment for ovarian cancer whenever possible.

- Ovarian cancer surgery should be performed by a gynecologic oncologist.

- Surgery for ovarian cancer usually involves removing both ovaries, both fallopian tubes, and the uterus (including the cervix).

- Fertility-sparing surgery may be an option for very early ovarian cancer that has not spread beyond the ovaries.

- Ovarian cancer is staged during surgery to remove the cancer. This is called surgical staging.

- Platinum-based chemotherapy is recommended after surgery for most stage I cancers and for all stage II, III, and IV ovarian cancers.

- A targeted therapy called bevacizumab may be added to chemotherapy for stage II, III, and IV ovarian cancers.

- Most stage I cancers do not need further treatment after chemotherapy.

- Maintenance therapy is recommended for many stage II, III, and IV cancers that show a complete or partial response to initial treatment.

- Maintenance therapy can reduce the risk of recurrence or extend the time until it returns or gets worse (progresses).

- Oral targeted therapies called PARP inhibitors are a newer option for maintenance therapy after initial treatment of ovarian cancer.

- PARP inhibitors work best in cancers with a BRCA mutation and/or HRD-positive cancers.

- If it was included in chemotherapy, bevacizumab may be given alone or with a PARP inhibitor for maintenance therapy.

- Clinical trials give people access to investigational treatments that may, in time, be approved by the FDA.

“My cancer experience has been a journey of self awareness. Along the way, I have met some inspiring women who have enriched my life. As I reach my 30th year of survivorship, I realize that hope and love sustained me through those early dark days. There is no such thing as false hope; we are all entitled to hope; hope that tomorrow will be a better day. And, of course, the love of family and friends.”

– Risa
Ovarian cancer survivor
3 Survivorship

- Your primary care doctor
- Healthy habits
- More information
- Key points

NCCN Guidelines for Patients®
Ovarian Cancer, 2022
Survivorship begins on the day you learn you have ovarian cancer. Survivorship focuses on the physical, emotional, and financial issues unique to cancer survivors. Managing the long-term side effects of cancer and its treatment, staying connected with your primary care doctor, and living a healthy lifestyle are important parts of survivorship.

For many survivors, the end of active treatment signals a time of celebration but also of great anxiety. This is normal. You may need support to address issues that arise from not having regular visits with your cancer care team. In addition, your treatment plan should include a schedule of follow-up cancer tests, treatment of long-term side effects, and care of your general health.

Cancer survivors face a unique financial burden. Paying for doctor visits, tests, and treatments can become unmanageable, especially for those with little or no health insurance. You may also have costs not directly related to treatment, such as travel expenses and the cost of childcare or missed work. The term financial toxicity is used to describe the problems patients face related to the cost of medical care.

Financial toxicity can affect your quality of life and access to needed health care. If you need help paying for your cancer care, financial assistance may be available. Talk with a patient navigator, your treatment team’s social worker, and your hospital’s financial services department. Several of the resources listed on page 56 contain helpful information on paying for cancer care.

Your primary care doctor

After finishing cancer treatment, your primary care doctor, also known as a general practitioner (GP) or primary care physician (PCP), will play an important role in your care. Your oncologist (cancer doctor) and PCP should work together to make sure you get the follow-up care you need. Your oncologist will develop a written survivorship care plan that includes:

- A summary of your cancer treatment history, including surgeries, chemotherapy, and radiation treatments
- A description of possible short-term, late, and long-term side effects
- Recommendations for monitoring for the return of cancer
- Information on when your care will be transferred to your PCP
- Clear roles and responsibilities for both your cancer care team and your PCP
- Recommendations on your overall health and well-being
Healthy habits

Monitoring for the return of cancer is important after finishing treatment. But, it is also important to keep up with other aspects of your health. Steps you can take to help prevent other health issues and to improve your quality of life are described next.

Get screened for other types of cancer, such as breast, colorectal, and skin cancer. Your primary care doctor should tell you what cancer screening tests you should have based on your age and risk level.

Get other recommended health care for your age, such as blood pressure screening, hepatitis C screening, and immunizations (such as the flu shot).

Leading a healthy lifestyle includes maintaining a healthy body weight. Try to exercise at a moderate intensity for at least 150 minutes per week. All patients should have a discussion with their doctor before starting a new exercise regimen. Eat a healthy diet with lots of plant-based foods, including vegetables, fruits, and whole grains.

Alcohol may increase the risk of certain cancers. Drink little to no alcohol.

If you are a smoker, quit! Counseling and other resources are available. Your treatment team can help.

Complementary and alternative therapies

Complementary and alternative therapies may help with side effects and improve comfort and well-being during and after cancer treatment. Some of these practices and products include:

- Acupuncture
- Dietary supplements
- Eastern medicine
- Medical marijuana
- Herbal teas and preparations
- Homeopathy
- Hypnosis
- Meditation
- Reiki
- Yoga
- Massage therapy

If you have questions or are curious about complementary therapies, talk to your treatment team. Many cancer centers have integrative oncology programs. Integrative oncology is an approach to cancer care that combines conventional (standard) cancer treatment with complementary and alternative therapies.
More information

For more information on cancer survivorship, the following are available at NCCN.org/patientguidelines:

- Survivorship Care for Healthy Living
- Survivorship Care for Cancer-Related Late and Long-Term Effects

These resources address topics relevant to survivors of ovarian cancer, including:

- Anxiety, depression, and distress
- Cognitive dysfunction
- Fatigue
- Pain
- Sexual dysfunction
- Sleep disorders
- Healthy lifestyles
- Immunizations
- Employment, insurance, and disability concerns

Key points

- Survivorship focuses on the physical, emotional, and financial issues unique to cancer survivors.
- Your oncologist and primary care doctor should work together to make sure you get the follow-up care you need.
- A survivorship care plan is helpful in transitioning your care to your primary care doctor.
- Healthy habits, including exercising and eating right, play a key role in helping to prevent other diseases and second cancers.
- If you need help paying for your cancer care, financial assistance may be available.

Take our survey
And help make the NCCN Guidelines for Patients better for everyone!

NCCN.org/patients/comments
Making treatment decisions

- 51 It’s your choice
- 51 Questions to ask
- 56 Resources
It is important to be comfortable with the cancer treatment you choose. This choice starts with having an open and honest conversation with your doctor.

**It’s your choice**

In shared decision-making, you and your doctors share information, discuss the options, and agree on a treatment plan. It starts with an open and honest conversation between you and your doctor.

Treatment decisions are very personal. What is important to you may not be important to someone else. Some things that may play a role in your decision-making:

- What you want and how that might differ from what others want
- Your religious and spiritual beliefs
- Your feelings about certain treatments like surgery or chemotherapy
- Your feelings about pain or side effects such as nausea and vomiting
- Cost of treatment, travel to treatment centers, and time away from work
- Quality of life and length of life
- How active you are and the activities that are important to you

Think about what you want from treatment. Discuss openly the risks and benefits of specific treatments and procedures. Weigh options and share concerns with your doctor. If you take the time to build a relationship with your doctor, it will help you feel supported when considering options and making treatment decisions.

**Second opinion**

It is normal to want to start treatment as soon as possible. While cancer can’t be ignored, there is time to have another doctor review your test results and suggest a treatment plan. This is called getting a second opinion, and it’s a normal part of cancer care. Even doctors get second opinions!

**Things you can do to prepare:**

- Check with your insurance company about its rules on second opinions. There may be out-of-pocket costs to see doctors who are not part of your insurance plan.
- Make plans to have copies of all your records sent to the doctor you will see for your second opinion.

**Support groups**

Many people diagnosed with cancer find support groups to be helpful. Support groups often include people at different stages of treatment. Some people may be newly diagnosed, while others may be finished with treatment. If your hospital or community doesn’t have support groups for people with cancer, check out the websites listed in this book.

**Questions to ask**

Possible questions to ask your doctors are listed on the following pages. Feel free to use these or come up with your own. Be clear about your goals for treatment and find out what to expect from treatment. Keep a notebook handy to record answers to your questions.
Questions about treatment

1. Am I able to have surgery first? Why or why not?
2. How do my age, general health, and other factors affect my treatment choices?
3. Which type of surgery do you recommend for me? How soon do I need it?
4. What if I am pregnant, or planning to get pregnant in the future?
5. Will I need chemotherapy after surgery? For how long?
6. Does my cancer have any biomarkers? How does this affect my treatment?
7. Do you consult the NCCN Clinical Practice Guidelines in Oncology® when considering treatment options?
8. Are you suggesting options other than what NCCN recommends? If so, why?
9. Do you have a clinical trial available for me? (also see next page)
10. How much will treatment cost? How much will my insurance company cover?
Questions about clinical trials

1. Is a clinical trial right for me? Which one?
2. What is the purpose of the study?
3. How many people will be in the clinical trial?
4. What are the tests and treatments for this study? How often will they occur?
5. Has the treatment been used before? Has it been used for other types of cancer?
6. What side effects can I expect from the treatment? Can the side effects be controlled?
7. How long will I be in the clinical trial?
8. Will I be able to get other treatment if this treatment doesn’t work?
9. How will you know the treatment is working?
10. Who will help me understand the costs of the clinical trial?
Questions about survivorship and late effects

1. What happens after treatment? How likely is it that I will be cancer free?
2. What late effects are caused by this treatment? How will these be screened?
3. What are the chances the cancer will return, or that I will get another type of cancer?
4. Whom do I see for follow-up care? How often? For how many years?
5. What should I do if I have trouble paying for follow-up visits and tests?
6. What tests will I have to monitor my health? Who is responsible for scheduling them?
7. I am looking for a survivor support group. What supportive services or other resources can you recommend?
8. What happens if I move after treatment and have to change doctors? Will you help me find a new doctor?
What is your experience?

1. Are you board-certified? If yes, in what area?

2. Do you only treat ovarian cancer? What else do you treat?

3. Is this treatment a major part of your practice?

4. How many patients like me have you treated?

5. How many procedures like the one you’re suggesting have you done?

6. How many of your patients have had complications? What were the complications?

7. What is the experience of those on your team?

8. Will you be consulting with experts to discuss my care? Whom will you consult?

9. I would like to get a second opinion. Is there someone you recommend?
Resources

American Cancer Society
cancer.org/cancer/ovarian-cancer.html

CancerCare
cancercare.org

Cancer.net
cancer.net/cancer-types/ovarian-fallopian-tube-and-peritoneal-cancer

Cancer Support Community
cancersupportcommunity.org

Clarity
clearityfoundation.org

FORCE: Facing Our Risk of Cancer Empowered
facingourrisk.org

Foundation for Women’s Cancer (FWC)
foundationforwomenscancer.org

National Cancer Institute
cancer.gov/types/ovarian

National Ovarian Cancer Coalition (NOCC)
ovarian.org

NormaLeah Ovarian Cancer Initiative
normaleah.org

Our Way Forward
ourwayforward.com

Ovarcome
ovarcome.org

Ovarian & Breast Cancer Alliance of Washington State
knowthesymptoms.org

Ovarian Cancer Research Alliance (OCRA)
ocrahope.org

Patient Advocate Foundation (PAF)
patientadvocate.org

SHARE: Breast and Ovarian Cancer Support
sharecancersupport.org

Sharsheret
sharsheret.org

Unite for HER
uniteforher.org

U.S. National Library of Medicine Clinical Trials Database
clinicaltrials.gov
Words to know

abdomen
The belly area between the chest and pelvis.

adjuvant treatment
Treatment given after the main treatment used to rid the body of disease.

ascites
Abnormal fluid buildup in the belly (abdomen) or pelvis.

bilateral salpingo-oophorectomy (BSO)
Surgery to remove both ovaries and both fallopian tubes.

biopsy
Removal of small amounts of tissue from the body to be tested for disease.

blood chemistry profile
A test that measures the amounts of many different chemicals in a sample of blood.

BRCA1 or BRCA2 genes
Genes involved in DNA repair. Abnormal changes (mutations) in either of these genes increases the risk of developing breast and ovarian cancer.

cancer antigen-125 (CA-125)
A substance that may be found in high amounts in the blood of patients with ovarian cancer. CA-125 levels may also help monitor how well cancer treatments are working or if cancer has come back.

cancer grade
A rating of how much the cancer cells look like normal cells.

cancer stage
A rating of the growth and spread of cancer in the body.

cancer staging
The process of rating and describing the extent of cancer in the body.

capsule
The thin layer of tissue that surrounds the ovaries.

cervix
The lower part of the uterus that connects to the vagina.

chemotherapy
Drugs that kill fast-growing cells throughout the body, including normal cells and cancer cells.

clear cell carcinoma of the ovary
A rare type of epithelial ovarian cancer, in which the insides of the cells look clear when viewed under a microscope. A less common ovarian cancer (LCOC).

clinical trial
Research on an investigational test or treatment to assess its safety or how well it works.

combination regimen
The use of two or more drugs.

complete blood count (CBC)
A test of the number of blood cells.

complete response
All signs and symptoms of cancer are gone after treatment.

computed tomography (CT) scan
A test that uses x-rays from many angles to make a picture of the inside of the body.

contrast
A substance put into your body to make clearer pictures during imaging tests.

cytoreductive surgery
Surgery to remove as much cancer as possible. Also called debulking surgery.
Words to know

debulking surgery
Surgery to remove as much cancer as possible. Also called cytoreductive surgery.

endometrioid carcinoma of the ovary
A type of epithelial ovarian cancer. Grade 2 and 3 endometrioid tumors are common. Grade 1 endometrioid tumors are less common ovarian cancers (OCOCs).

epithelial cells
Cells that form the outer layer of tissue around organs in the body.

epithelial ovarian cancer
Cancer that starts in the cells that form the outer layer of tissue around the ovaries.

fallopian tube
A thin tube through which an egg travels from the ovary to the uterus.

fertility-sparing surgery
Surgery that removes one ovary and the attached fallopian tube.

gastrointestinal (GI) evaluation
A test to view the organs that food passes through when you eat.

gastrointestinal tract
The group of organs that food passes through when you eat.

genetic counseling
A discussion with a health expert about the risk for a disease caused by changes in genes.

genetic counselor
A health expert that has special training to help patients understand changes in genes that are related to disease.

genetic testing
Tests to look for changes in coded instructions (genes) that increase the risk for a disease.

gynecologic oncologist
A surgeon who is an expert in cancers that start in a woman’s reproductive organs.

hereditary ovarian cancer
Ovarian cancer caused by gene mutations passed down from parent to child.

hormone
Chemicals in the body that activate cells or organs.

hot flashes
A health condition of intense body heat and sweat for short periods.

hyperthermic intraperitoneal chemotherapy (HIPEC)
A cancer treatment that involves filling the abdominal cavity with warmed chemotherapy drugs.

hysterectomy
Surgery to remove the uterus.

implant
Cancer cells that broke away from the first tumor and formed new tumors on the surface of nearby organs and tissues.

infusion
A method of giving drugs slowly through a needle into a vein.

intraperitoneal (IP) chemotherapy
Chemotherapy drugs given directly into the belly (abdomen) through a small tube.

intravenous (IV) chemotherapy
Chemotherapy drugs given through a needle or tube inserted into a vein.

invasive implant
Cancer cells that broke away from the first tumor and are growing into (invading) supporting tissue of nearby organs.
**Words to know**

**laparotomy**
Surgery with a long, up-and-down cut through the wall of the belly (abdomen).

**less common ovarian cancers (LCOC)**
Rare types of ovarian cancer, some of which are epithelial cancers. Includes carcinosarcoma, clear cell carcinoma, mucinous carcinoma, grade 1 endometrioid, low-grade serous, borderline epithelial, malignant sex-cord stromal, and malignant germ cell tumors. Also called less common ovarian histologies (LCOHs).

**liver function test**
A blood test that measures chemicals that are made or processed by the liver to check how well the liver is working.

**low malignant potential (LMP) tumor**
A tumor formed by abnormal cells that start in the epithelial cells of the ovary. This tumor type is slow growing and does not invade other tissue. A less common ovarian cancer (LCOC). Also called a borderline epithelial tumor.

**lymph**
A clear fluid containing white blood cells that fight infection and disease.

**lymph nodes**
Small groups of special disease-fighting cells located throughout the body.

**lymph vessels**
Small tubes that carry lymph—a clear fluid with white blood cells that fight infection and disease—throughout the body.

**Lynch syndrome**
Abnormal changes within genes that increase the chances of developing colon, rectal, endometrial, ovarian, and other cancers. It is also called hereditary non-polyposis colorectal cancer (HNPCC).

**magnetic resonance imaging (MRI)**
A test that uses radio waves and powerful magnets to make pictures of the inside of the body.

**maintenance therapy**
Treatment given to continue (maintain) good results of prior treatment.

**medical oncologist**
A doctor who is an expert in treating cancer with drugs such as chemotherapy.

**menopause**
The point in time when menstrual periods end.

**menstrual cycle**
Changes in the womb and ovaries that prepare a woman’s body for pregnancy.

**metastasis**
The spread of cancer cells from the first tumor to another body part.

**microscopic metastases**
Cancer cells that have spread from the first tumor to another body part and are too small to be seen with the naked eye.

**mucinous carcinoma of the ovary**
One of 4 types of epithelial cancer. A less common ovarian cancer (LCOC).

**mutation**
An abnormal change in the instructions in cells for making and controlling cells.

**neuropathy**
A nerve problem that causes pain, tingling, and numbness in the hands and feet.

**observation**
A period of testing to watch for cancer growth.

**omentum**
The layer of fatty tissue that covers organs in the belly (abdomen).
ovary
One of a pair of organs that make hormones and eggs for reproduction.

pathologist
A doctor who is an expert in testing cells and tissue to find disease.

pelvic exam
A physical exam of the vagina, cervix, uterus, fallopian tubes, and ovaries.

pelvis
The area of the body between the hip bones.

peritoneal cavity
The space inside the belly (abdomen) that contains abdominal organs such as the intestines, stomach, and liver.

peritoneal washing
A test in which a special liquid is used to wash the inside of the belly (peritoneal cavity) to check for cancer cells.

peritoneum
The layer of tissue that lines the inside of the belly (abdomen) and pelvis and covers most organs in this space.

persistent disease
Cancer that stayed the same—didn’t get better or worse—during treatment.

platinum agent
A cancer drug that is made with platinum. These drugs damage DNA in cells, which stops them from making new cells and causes them to die.

platinum-based chemotherapy
Treatment with two or more chemotherapy drugs and the main drug is made with platinum. Such drugs include cisplatin and carboplatin.

platinum-resistant
When cancer drugs made with platinum, such as cisplatin and carboplatin, do not work well against the cancer.

platinum-sensitive
When cancer drugs made with platinum, such as cisplatin and carboplatin, work well against the cancer.

poly (ADP-ribose) polymerase (PARP) inhibitor
A type of targeted therapy that blocks a protein in cells called PARP that helps repair damaged DNA.

positron emission tomography (PET)
A test that uses a sugar radiotracer and x-rays from many angles to view the shape and function of organs and tissues inside the body.

primary tumor
The first mass of cancer cells in the body.

prognosis
The likely or expected course and outcome of a disease.

radiologist
A doctor who is an expert in interpreting imaging tests.

recurrence
The return of cancer after treatment. Also called a relapse.

regimen
A treatment plan that specifies the drug(s), dose, schedule, and length of treatment.

relapse
The return of cancer after treatment. Also called a recurrence.

reproductive system
The group of organs that work together for reproduction. In females, this includes the
ovaries, fallopian tubes, uterus, cervix, and vagina.

**serous**
A type of epithelial ovarian cancer. Grade 2 and 3 (high-grade) serous tumors are the most common ovarian cancers. Grade 1 (low-grade) serous tumors are less common ovarian cancers (LCOCs).

**sugar radiotracer**
A form of sugar that is put into your body and lets off a small amount of energy that is absorbed by active cells.

**supportive care**
Treatment given to relieve the symptoms of a disease. Also called palliative care.

**surgical staging**
The process of finding out how far cancer has spread by performing tests and procedures during surgery to remove the cancer.

**targeted therapy**
Treatment with drugs that target a specific or unique feature of cancer cells.

**taxane**
A type of chemotherapy drug. Often given with a platinum chemotherapy drug to treat ovarian cancer.

**treatment response**
An outcome or improvement related to treatment.

**tumor**
An abnormal mass formed by the overgrowth of cells.

**tumor marker**
A substance found in body tissue or fluid that may be a sign of cancer.

**ultrasound**
A test that uses sound waves to take pictures of the inside of the body.

**unilateral salpingo-oophorectomy (USO)**
Surgery that removes one ovary and the attached fallopian tube.

**uterus**
The organ in the pelvis where a fetus grows and develops during pregnancy. Also called womb.

**vagina**
The hollow, muscular tube through which babies are born.

**vein**
A blood vessel that carries blood back to the heart from all parts of the body.

**washings**
Sample of liquid that is tested for cancer cells after it is used to “wash” the inside of the belly (peritoneal cavity).

**white blood cell**
A type of blood cell that helps fight infections in the body.
NCCN Contributors

This patient guide is based on the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Ovarian Cancer, Version 4.2022. It was adapted, reviewed, and published with help from the following people:

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Philadelphia, Pennsylvania
800.789.7366 • pennmedicine.org/cancer

Case Comprehensive Cancer Center/University Hospitals Seidman Cancer Center and Cleveland Clinic Taussig Cancer Institute
Cleveland, Ohio
800.641.2422 • UH Seidman Cancer Center uohospitals.org/services/cancer-services
866.223.8100 • CC Taussig Cancer Institute my.clevelandclinic.org/departments/cancer
216.844.8797 • Case CCC case.edu/cancer

City of Hope National Medical Center
Los Angeles, California
800.826.4673 • cityofhope.org

Dana-Farber/Brigham and Women's Cancer Center | Massachusetts General Hospital Cancer Center
Boston, Massachusetts
617.732.5500 • youhaveus.org
617.726.5130
massgeneral.org/cancer-center

Duke Cancer Institute
Durham, North Carolina
888.275.3853 • dukecancerinstitute.org

Fox Chase Cancer Center
Philadelphia, Pennsylvania
888.369.2427 • foxchase.org

Fred & Pamela Buffett Cancer Center
Omaha, Nebraska
402.559.5600 • unmc.edu/cancercenter

Fred Hutchinson Cancer Research Center/Seattle Cancer Care Alliance
Seattle, Washington
206.606.7222 • seattlecc.org
206.667.5000 • fredhutch.org

Huntsman Cancer Institute at the University of Utah
Salt Lake City, Utah
800.824.2073 • huntsmancancer.org

Indiana University
Melvin and Bren Simon Comprehensive Cancer Center
Indianapolis, Indiana
888.800.4622 • www.cancer.iu.edu

Mayo Clinic Cancer Center
Phoenix/Scottsdale, Arizona
Jacksonville, Florida
Rochester, Minnesota
480.301.8000 • Arizona
904.953.0853 • Florida
507.588.3270 • Minnesota
mayoClinic.org/cancercenter

Memorial Sloan Kettering Cancer Center
New York, New York
800.525.2225 • mskcc.org

Moffitt Cancer Center
Tampa, Florida
888.663.3488 • moffitt.org

O'Neal Comprehensive Cancer Center at UAB
Birmingham, Alabama
800.822.0933 • uab.edu/onealcancercenter

Robert H. Lurie Comprehensive Cancer Center of Northwestern University
Chicago, Illinois
866.587.4322 • cancer.northwestern.edu

Roswell Park Comprehensive Cancer Center
Buffalo, New York
877.275.7724 • roswellpark.org

Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine
St. Louis, Missouri
800.600.3606 • siteman.wustl.edu

St. Jude Children's Research Hospital/
The University of Tennessee Health Science Center
Memphis, Tennessee
866.278.5833 • sjude.org
901.448.5500 • uthsc.edu

Stanford Cancer Institute
Stanford, California
877.668.7335 • cancer.stanford.edu

The Ohio State University Comprehensive Cancer Center - James Cancer Hospital and Solove Research Institute
Columbus, Ohio
800.293.5066 • cancer.osu.edu

The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins
Baltimore, Maryland
410.955.8964
www.hopkinskimmelcancercenter.org

The University of Texas MD Anderson Cancer Center
Houston, Texas
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