Ovarian Cancer

Includes Epithelial, Fallopian Tube, Primary Peritoneal Cancer, and Ovarian Germ Cell Tumors

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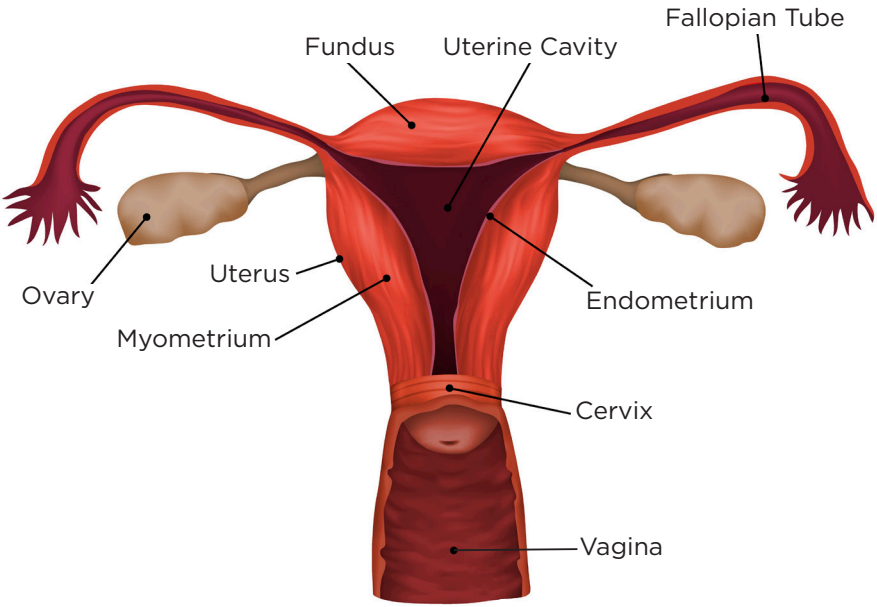
Overview

Ovarian epithelial cancer, fallopian tube cancer, and primary peritoneal cancer are diseases in which malignant (cancer) cells form in the tissue covering the ovary or lining the fallopian tube or peritoneum.

The ovaries are a pair of organs in the female reproductive system. They are in the pelvis, one on each side of the uterus (the hollow, pear-shaped organ where a baby grows). Each ovary is about the size and shape of an almond. The ovaries make eggs and female hormones (chemicals that control the way certain cells or organs work).

The fallopian tubes are a pair of long, slender tubes, one on each side of the uterus. Eggs pass from the ovaries, through the fallopian tubes, to the uterus. Cancer sometimes begins at the end of the fallopian tube near the ovary and spreads to the ovary.

The peritoneum is the tissue that lines the abdominal wall and covers organs in the abdomen. Primary peritoneal cancer is cancer that forms in the peritoneum and has not spread there from another part of the body. Cancer sometimes begins in the peritoneum and spreads to the ovary.



Ovarian germ cell tumor is a disease in which malignant (cancer) cells form in the germ (egg) cells of the ovary.

Ovarian germ cell tumor describes several different types of cancer. The most common ovarian germ cell tumor is called dysgerminoma. You can learn more about ovarian germ cell tumors on page 13.

Risk Factors

Anything that increases your risk of getting a disease is called a risk factor. Having a risk factor does not mean that you will get cancer; not having risk factors does not mean that you will not get cancer.

Women who have one first-degree relative (mother, daughter, or sister) with a history of ovarian cancer have an increased risk of ovarian cancer. This risk is higher in women who have one first-degree relative and one second-degree relative (grandmother or aunt) with a history of ovarian cancer. This risk is even higher in women who have two or more first-degree relatives with a history of ovarian cancer.

The genes in cells carry the hereditary information received from a person's parents. Some ovarian, fallopian tube, and primary peritoneal cancers are caused by inherited gene mutations (changes). Hereditary ovarian cancer makes up about 1 out of 5 of all cases of ovarian cancer. Many cancers can have a hereditary link to ovarian cancer.

There are tests that can detect gene mutations. Genetic testing can help determine treatment and help family members know of their own risk for the future. All patients with ovarian, fallopian tube, or primary peritoneal cancer should be referred for genetic risk evaluation.

Signs and Symptoms

Signs and symptoms of ovarian, fallopian tube, or peritoneal cancer include pain or swelling in the abdomen. Signs and symptoms may include the following:

- Bloating (swelling or feeling of fullness of the abdomen)
- Pain in the pelvis or abdomen
- Having a hard time eating or feeling of fullness
- Problems with frequent need to pass urine or need to go suddenly

Ovarian, fallopian tube, or peritoneal cancer may not cause early signs or symptoms. When signs or symptoms do appear, the cancer is often advanced.

Tests for Diagnosis and Monitoring

Not every person needs every test or procedure.

Physical exam and history: An exam of the body to check general signs of health, including checking for signs of disease, such as lumps or anything else that seems unusual. A history of your health habits and past illnesses and treatments will also be taken.

Pelvic exam: An exam of the vagina, cervix, uterus, fallopian tubes, ovaries, and rectum. A speculum is inserted into the vagina and the provider looks at the vagina and cervix for signs of disease. A Pap test of the cervix may be done. The provider also inserts 1 or 2 lubricated, gloved fingers of 1 hand into the vagina and places the other hand over the lower abdomen to feel the size, shape, and position of the uterus and ovaries. The provider also inserts a lubricated, gloved finger into the rectum to feel for lumps or abnormal areas.

CA 125 assay: A test that measures the level of CA 125 in the blood. CA 125 is a substance released by cells into the bloodstream. An increased CA 125 level can be a sign of cancer or another condition such as endometriosis.

Ultrasound exam: An imaging test in which high-energy sound waves (ultrasound) are bounced off internal tissues or organs in the abdomen, and make echoes. The echoes form a picture of body tissues called a sonogram. A transvaginal ultrasound uses a special probe that is put into the vagina.

CT scan (CAT scan): A procedure that makes a series of detailed pictures of areas inside the body, taken from different angles. The pictures are made by a computer linked to an x-ray machine. A dye may be injected into a vein or swallowed to help the organs or tissues show up more clearly. This procedure is also called computed tomography, computerized tomography, or computerized axial tomography.

PET scan (positron emission tomography scan): A procedure to find malignant tumor cells in the body. A very small amount of radioactive glucose (sugar) is injected into a vein. The PET scanner rotates around the body and makes a picture of where glucose is being used in the body. Malignant tumor cells show up brighter in the picture because they are more active and take up more glucose than normal cells do.

MRI (magnetic resonance imaging): A procedure that uses a magnet, radio waves, and a computer to make a series of detailed pictures of areas inside the body. This procedure is also called nuclear magnetic resonance imaging (NMRI).

Chest x-ray: An x-ray of the organs and bones inside the chest. An x-ray is a type of energy beam that can go through the body and onto film, making a picture of areas inside the body.

Biopsy: The removal of cells or tissues so they can be viewed under a microscope by a pathologist to check for signs of cancer.

Certain Factors Affect Treatment Options and Prognosis (Chance of Recovery).

The prognosis (chance of recovery) and treatment options depend on the following:

- The type of ovarian cancer and how much cancer there is
- The stage and grade of the cancer
- Whether you have extra fluid in the abdomen that causes swelling
- Whether all of the tumor can be removed by surgery
- Whether there are changes in the BRCA1 or BRCA2 genes
- Your age and general health
- Whether the cancer has just been diagnosed or has recurred (come back)

How Cancer Spreads

Cancer spreads three ways in the body. Cancer can spread through tissue, the lymph system, and the blood:

- **Tissue**: The cancer spreads from where it began by growing into nearby areas.
- **Lymph system**: The cancer spreads from where it began by getting into the lymph system. The cancer travels through the lymph vessels to other parts of the body.
- **Blood**: The cancer spreads from where it began by getting into the blood. The cancer travels through the blood vessels to other parts of the body.

Cancer may spread from where it began to other parts of the body. When cancer spreads to another part of the body, it is called metastasis. Cancer cells break away from where they began (the primary tumor) and travel through the lymph system or blood.

Staging

The process used to find out whether cancer has spread within the organ or to other parts of the body is called staging. The information gathered from the staging process determines the stage of the disease. It is important to know the stage in order to plan treatment. The results of the tests used to diagnose cancer are often also used to stage the disease.

The following stages are used for ovarian epithelial, fallopian tube, and primary peritoneal cancer:

- Stage I
- Stage II
- Stage III
- Stage IV

Stage I

In stage I, cancer is found in one or both ovaries or fallopian tubes. Stage I is divided into stage IA, stage IB, and stage IC.

- Stage IA: Cancer is found inside a single ovary or fallopian tube.
- Stage IB: Cancer is found inside both ovaries or fallopian tubes.
- Stage IC: Cancer is found inside one or both ovaries or fallopian tubes and one of the following is true:
  - Cancer is also found on the outside surface of one or both ovaries or fallopian tubes; or
  - The capsule (outer covering) of the ovary ruptured (broke open) before or during surgery; or
  - Cancer cells are found in the fluid of the peritoneal cavity (the body cavity that contains most of the organs in the abdomen) or in washings of the peritoneum (tissue lining the peritoneal cavity).

Stage II (2)

In stage II, cancer is found in one or both ovaries or fallopian tubes and has spread into other areas of the pelvis, or primary peritoneal cancer is found within the pelvis. Stage II ovarian epithelial and fallopian tube cancers are divided into stage IIA and stage IIB.

- Stage IIA: Cancer has spread from where it first formed to the uterus and/or the fallopian tubes and/or the ovaries.
- Stage IIB: Cancer has spread from the ovary or fallopian tube to organs in the peritoneal cavity (the space that contains the abdominal organs).

Stage III (3)

In stage III, cancer is found in one or both ovaries or fallopian tubes, or is primary peritoneal cancer, and has spread outside the pelvis to other parts of the abdomen and/or to nearby lymph nodes. Stage III is divided into stage IIIA, stage IIIB, and stage IIIC.

- In stage IIIA, one of the following is true:
  - Cancer has spread to lymph nodes in the area outside or behind the peritoneum only; or
  - Cancer cells that can be seen only with a microscope have spread to the surface of the peritoneum outside the pelvis. Cancer may have spread to nearby lymph nodes.
- Stage IIIB: Cancer has spread to the peritoneum outside the pelvis and the cancer in the peritoneum is 2 centimeters or smaller. Cancer may have spread to lymph nodes behind the peritoneum.
- Stage IIIC: Cancer has spread to the peritoneum outside the pelvis and the cancer in the peritoneum is larger than 2 centimeters. Cancer may have spread to lymph nodes behind the peritoneum or to the surface of the liver or spleen.

Stage IV (4)

In stage IV, cancer has spread beyond the abdomen to other parts of the body. Stage IV is divided into stage IVA and stage IVB.

- Stage IVA: Cancer cells are found in extra fluid that builds up around the lungs.
- Stage IVB: Cancer has spread to organs and tissues outside the abdomen, including lymph nodes in the groin.

Ovarian epithelial, fallopian tube, and primary peritoneal cancers are grouped for treatment as early or advanced cancer.

Stage I ovarian epithelial and fallopian tube cancers are treated as early cancers.

Stages II, III, and IV ovarian epithelial, fallopian tube, and primary peritoneal cancers are treated as advanced cancers.

Treatment Option Overview

Key Points to Learn In This Section

There are different types of treatment depending on the type of cancer. These could include surgery, drug treatment, or radiation therapy.

Clinical Trials

You can enter clinical trials before, during, or after starting your cancer treatment.

Surgery

Most patients have surgery to remove as much of the tumor as possible. Different types of surgery may include:

- **Hysterectomy**: Surgery to remove the uterus and, sometimes, the cervix. When only the uterus is removed, it is called a partial hysterectomy. When both the uterus and the cervix are removed, it is called a total hysterectomy. If the uterus and cervix are taken out through the vagina, the operation is called a vaginal hysterectomy. If the uterus and cervix are taken out through a large incision (cut) in the abdomen, the operation is called a total abdominal hysterectomy. If the uterus and cervix are taken out through a small incision (cut) in the abdomen using a laparoscope, the operation is called a total laparoscopic hysterectomy.
- **Unilateral salpingo-oophorectomy**: A surgical procedure to remove one ovary and one fallopian tube.
- **Bilateral salpingo-oophorectomy**: A surgical procedure to remove both ovaries and both fallopian tubes.
- **Omentectomy**: A surgical procedure to remove the omentum (tissue in the peritoneum that contains blood vessels, nerves, lymph vessels, and lymph nodes).
- **Lymph node biopsy**: The removal of all or part of a lymph node. A pathologist views the tissue under a microscope to look for cancer cells.
- **Tumor debulking**: A surgical procedure in which as much of the tumor as possible is removed. Some tumors cannot be completely removed.

Chemotherapy

Chemotherapy is a cancer treatment that uses drugs to stop the growth of cancer cells, either by killing the cells or by stopping them from dividing.

- **Systemic chemotherapy**: When chemotherapy is taken by mouth or injected into a vein or muscle, the drugs enter the bloodstream and can reach cancer cells throughout the body.
- **Regional chemotherapy**: When chemotherapy is placed directly into the cerebrospinal fluid, an organ, or a body cavity such as the abdomen, the drugs mainly affect cancer cells in those areas. A type of regional chemotherapy used to treat ovarian cancer is intraperitoneal (IP) chemotherapy. In IP chemotherapy, the anticancer drugs are carried directly into the peritoneal cavity (the space that contains the abdominal organs) through a thin tube.
- **Combination chemotherapy**: Treatment with more than one anticancer drug.

Targeted Therapy

A type of treatment that uses drugs or other substances to identify and attack specific cancer cells without harming normal cells.

- **Monoclonal antibody therapy:** A type of targeted therapy that uses antibodies made in the laboratory, from a single type of immune system cell. These antibodies can identify substances on cancer cells or normal substances that may help cancer cells grow. The antibodies attach to the substances and kill the cancer cells, block their growth, or keep them from spreading. Monoclonal antibodies are given by infusion. They may be used alone or to carry drugs, toxins, or radioactive material directly to cancer cells.
- **Immunotherapy:** Immunotherapy is a treatment that uses the patient's immune system to fight cancer. Substances made by the body or made in a laboratory are used to boost, direct, or restore the body's natural defenses against cancer. This type of cancer treatment is also called biotherapy.

Radiation Therapy

Radiation therapy is a cancer treatment that uses high-energy x-rays or other types of radiation to kill cancer cells or keep them from growing. The use of radiation in ovarian cancer is limited based on the patient's disease.

Ovarian Germ Cell Tumors

Ovarian germ cell tumor is a disease in which malignant (cancer) cells form in the germ (egg) cells of the ovary. Ovarian germ cell tumor is a general name that is used to describe several different types of cancer. The most common ovarian germ cell tumor is called dysgerminoma.

Signs of ovarian germ cell tumor are swelling of the abdomen or vaginal bleeding after menopause. Ovarian germ cell tumors can be hard to diagnose (find) early. Often there are no symptoms in the early stages, but tumors may be found during regular gynecologic exams (checkups). The following signs may be present:

- Swollen abdomen without weight gain in other parts of the body.
- Bleeding from the vagina after menopause (when you are no longer having menstrual periods for 1 year).

The following stages are used for ovarian germ cell tumors:

Stage I

In stage I, cancer is found in one or both ovaries. Stage I is divided into stage IA, stage IB, and stage IC.

- **Stage IA**: Cancer is found inside a single ovary.
- **Stage IB**: Cancer is found inside both ovaries.
- **Stage IC**: Cancer is found inside one or both ovaries and one of the following is true:
  - Cancer is also found on the outside surface of one or both ovaries; or

- The capsule (outer covering) of the ovary has ruptured (broken open); or
- Cancer cells are found in the fluid of the peritoneal cavity (the body cavity that contains most of the organs in the abdomen) or in washings of the peritoneum (tissue lining the peritoneal cavity).

Stage II (2)

In stage II, cancer is found in one or both ovaries and has spread into other areas of the pelvis. Stage II is divided into stage IIA, stage IIB, and stage IIC.

- **Stage IIA**: Cancer has spread to the uterus and/or fallopian tubes (the long slender tubes through which eggs pass from the ovaries to the uterus).
- **Stage IIB**: Cancer has spread to other tissue within the pelvis.
- **Stage IIC**: Cancer is found inside one or both ovaries and has spread to the uterus and/or fallopian tubes, or to other tissue within the pelvis. Also, one of the following is true:
  - Cancer is found on the outside surface of one or both ovaries; or
  - The capsule (outer covering) of the ovary has ruptured (broken open); or
  - Cancer cells are found in the fluid of the peritoneal cavity (the body cavity that contains most of the organs in the abdomen) or in washings of the peritoneum (tissue lining the peritoneal cavity).

Stage III (3)

In stage III, cancer is found in one or both ovaries and has spread outside the pelvis to other parts of the abdomen and/or nearby lymph nodes. Stage III is divided into stage IIIA, stage IIIB, and stage IIIC.

- **Stage IIIA**: The tumor is found in the pelvis only, but cancer cells that can be seen only with a microscope have spread to the surface of the peritoneum (tissue that lines the abdominal wall and covers most of the organs in the abdomen), the small intestines, or the tissue that connects the small intestines to the wall of the abdomen.
- **Stage IIIB**: Cancer has spread to the peritoneum and the cancer in the peritoneum is 2 centimeters or smaller.
- **Stage IIIC**: Cancer has spread to the peritoneum and the cancer in the peritoneum is larger than 2 centimeters and/or cancer has spread to lymph nodes in the abdomen.

Cancer that has spread to the surface of the liver is also considered stage III ovarian cancer.

Stage IV (4)

In stage IV, cancer has spread beyond the abdomen to other parts of the body, such as the lungs or tissue inside the liver.

Cancer cells in the fluid around the lungs is also considered stage IV ovarian cancer.

Recurrent Cancer

Recurrent cancer is cancer that has recurred (come back) after it has been treated. Persistent cancer is cancer that does not go away with treatment.

There are different types of treatment for patients with ovarian germ cell tumors

Surgery

Surgery is the most common treatment of ovarian germ cell tumor. A doctor may take out the cancer using one of the following types of surgery.

- **Unilateral salpingo-oophorectomy**: A surgical procedure to remove one ovary and one fallopian tube.
- **Total hysterectomy**: A surgical procedure to remove the uterus, including the cervix. If the uterus and cervix are taken out through the vagina, the operation is called a vaginal hysterectomy. If the uterus and cervix are taken out through a large incision (cut) in the abdomen, the operation is called a total abdominal hysterectomy. If the uterus and cervix are taken out through a small incision (cut) in the abdomen using a laparoscope, the operation is called a total laparoscopic hysterectomy.
- **Bilateral salpingo-oophorectomy**: A surgical procedure to remove both ovaries and both fallopian tubes.
- **Tumor debulking**: A surgical procedure in which as much of the tumor as possible is removed. Some tumors cannot be completely removed.
- **Adjuvant therapy**: Even if the doctor removes all the cancer that can be seen at the time of the operation, some patients may be offered chemotherapy or radiation therapy after surgery to kill any cancer cells that are left. Treatment given after the surgery, to lower the risk that the cancer will come back, is called adjuvant therapy.
- **Second-look laparotomy**: After chemotherapy for an ovarian germ cell tumor, a second-look laparotomy may be done. This is similar to the laparotomy that is done to find out the stage of the cancer. Second-look laparotomy is a surgical procedure to find out if tumor cells are left after primary treatment. During this procedure, the doctor will take samples of lymph nodes and other tissues in the abdomen to see if any cancer is left. This procedure is not done for dysgerminomas.

Observation

Observation is closely watching a patient's condition without giving any treatment unless signs or symptoms appear or change.

Chemotherapy

Chemotherapy is a cancer treatment that uses drugs to stop the growth of cancer cells, either by killing the cells or by stopping them from dividing.

- **Systemic chemotherapy:** When chemotherapy is taken by mouth or injected into a vein or muscle, the drugs enter the bloodstream and can reach cancer cells throughout the body.
- **Regional chemotherapy:** When chemotherapy is placed directly into the cerebrospinal fluid, an organ, or a body cavity such as the abdomen, the drugs mainly affect cancer cells in those areas.
- **Combination chemotherapy:** When more than one anticancer drug is used. The way the chemotherapy is given depends on the type and stage of the cancer being treated.

Radiation Therapy

Radiation therapy is a cancer treatment that uses high-energy x-rays or other types of radiation to kill cancer cells or keep them from growing. The use of radiation in ovarian cancer is limited based on the patient's disease.

Clinical Trials

Clinical trials are done to find out if new cancer treatments are safe and effective or better than the standard treatment.

People who take part in a clinical trial may receive:

- The standard drugs alone or
- The standard drugs plus the new treatment being studied

> Many of today's standard treatments for cancer are based on earlier clinical trials. **Ask if there is a clinical trial right for you.**

Taking part in a clinical trial helps improve the way cancer will be treated in the future. Even when clinical trials do not lead to effective new treatments, they often answer important questions and help move research forward.

Some clinical trials only include people who have not yet received treatment. Other trials test treatments for those whose cancer has not gotten better. There are also clinical trials that test new ways to stop cancer from coming back or reduce the side effects of cancer treatment.

As Treatment Progresses

Some tests may be repeated to see how well your treatment is working. Decisions about whether to continue, change, or stop treatment may be based on the results of these tests.

A plan for your long term care will be discussed with your treatment team and shared with your primary care provider.

Learn More About Ovarian Cancer

American Cancer Society
cancer.org

National Cancer Institute
cancer.gov

National Comprehensive Cancer Network Guidelines for Patients
nccn.org/patientresources/patient-resources/guidelines-for-patients

MedlinePlus
medlineplus.gov

Common Questions

What does the pathology report say?

What is the stage of my cancer?

What are my goals for treatment?

What are my treatment choices?

What kind of support services are available for me about finances, emotions, spiritual questions, etc.?

My Healthcare Team	Contact Information
Navigator:	
Medical Oncologist:	
Pharmacy:	
Radiation Oncologist:	
Dietition/Nutritionist:	
Surgeon:	
Primary Care Doctor:	
Counselor/Therapist:	
Other:	
Other:	

Notes

Notes

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