



Ovarian Cancer

in Georgia, 1999-2003



Georgia Department of Human Resources
Division of Public Health

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What is Ovarian Cancer?

Ovarian cancer begins in the ovaries. The ovaries are a pair of organs in the female reproductive system. They are located in the pelvis, one on each side of the uterus. Each ovary is about the size and shape of an almond. The ovaries have two functions: they produce eggs and female hormones (estrogen and progesterone). These hormones influence the development of a woman's breasts, body shape, and body hair. They also regulate the menstrual cycle and pregnancy. The ovaries contain three kinds of tissue:

Germ cells: These cells make eggs. The eggs are formed on the inside of the ovary.

Stromal cells: These cells are inside the ovary, between germ cells. They make most of the female hormones.

Epithelial cells: These cells cover the ovary. Most ovarian cancers start in this covering.

Tumors in the ovary are named for the kinds of cells the tumor started from and whether the tumor is benign or cancerous. About 85% to 90% of ovarian cancers begin on the surface of the ovary (epithelial carcinomas). Ovarian cancer that begins in the egg-producing cells (germ cell tumors) and cancer that begins in the supportive tissue surrounding the ovaries (stromal tumors) are rare.

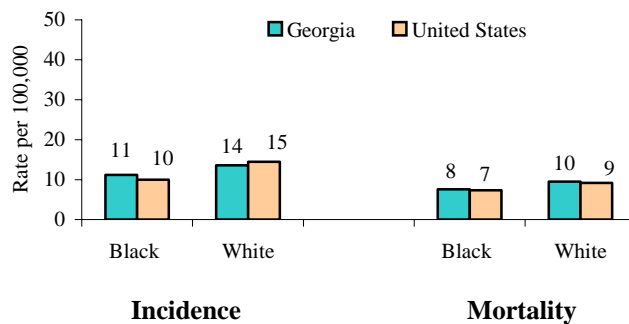
Ovarian cancer is the fifth most common cancer diagnosed among women in Georgia. Based on data from Georgia Comprehensive Cancer Registry it is estimated that in 2006, over 600 new cases of ovarian cancer will be diagnosed, and about 430 women in Georgia will die from this disease.

How is Ovarian Cancer Detected?

The sooner ovarian cancer is found and treated, the better a woman's chance for recovery. But ovarian cancer is hard to detect early. Many times, women with ovarian cancer have no symptoms or just mild symptoms until the disease is in an advanced stage. Scientists are studying ways to detect ovarian cancer before symptoms develop. They are exploring the usefulness of measuring the level of CA 125, a substance called a tumor marker, which is often found in higher-than-normal amounts in the blood of women with ovarian cancer. They also are evaluating transvaginal ultrasound, a test that may help detect the disease early.

Who Develops Ovarian Cancer?

Ovarian Cancer Incidence and Mortality Rates* by Race, Georgia (Incidence: 1999-2003; Mortality: 2000-2004) and United States (1999-2003)



*Rates are age-adjusted to 2000 US population.

Each year from 1999 to 2003, nearly 520 cases of ovarian cancer were reported to the Georgia Comprehensive Cancer Registry. White women were more likely to be diagnosed with the disease than were black women.

Each year from 2000-2004, over 350 Georgia women died from ovarian cancer. The mortality rate for white women was higher than that for black women.

Overall, Georgia's ovarian cancer incidence and mortality rates were similar to the US average.

What are the Causes and Risk Factors for Ovarian Cancer?

We do not yet know exactly what causes ovarian cancer, but we do know that certain risk factors are linked to the disease. A risk factor is anything that indicates a person has a higher than normal chance of getting a disease such as cancer. Different cancers have different risk factors. Some risk factors, such as obesity, can be controlled. Others, like a person's age or family history, can't be controlled. But having a risk factor, or even several, doesn't mean that a person will get the disease.

While all women are at risk for ovarian cancer, the following factors can increase a woman's chances of having the disease.

Risk Factors That Can Be Controlled

- **Childbearing:** Women who have never had children are more likely to develop ovarian cancer than women who have had children. In fact, the more children a woman has had, the less likely she is to develop ovarian cancer.
- **Menopausal hormone therapy:** Some studies have suggested that women who take estrogen by itself (estrogen without progesterone) for 10 or more years may have an increased risk of ovarian cancer.
- **Obesity:** A study from the American Cancer Society found a higher rate of death from ovarian cancer in women who were overweight. The risk increased by 50% in the heaviest women.

Risk Factors That Cannot Be Controlled

- **Family history:** First-degree relatives (mother, daughter, sister) of a woman who has had ovarian cancer are at increased risk of developing this type of cancer themselves. The likelihood is especially high if two or more first-degree relatives have had the disease. The risk is somewhat less, but still above average, if other relatives (grandmother, aunt, cousin) have had ovarian cancer. Also, women with a family history of cancer of the breast, uterus, colon, or rectum may also have an increased risk of ovarian cancer.
- **Age:** The likelihood of developing ovarian cancer increases as a woman gets older. Most ovarian cancers occur in women over the age of 55.
- **Personal history:** Women who have had cancer of the breast, uterus, colon, or rectum may have a greater chance of developing ovarian cancer than women who have not had cancer of the breast, uterus, colon or rectum.
- **Menstrual periods:** According to American Cancer Society, women who started menstruating at an early age (before age 12), and/or experienced menopause after age 50 may have an increased risk of ovarian cancer.

What are the Symptoms of Ovarian Cancer?

Ovarian cancer often shows no obvious signs or symptoms until late in its development. Signs and symptoms of ovarian cancer may include:

- General abdominal discomfort and/or pain (gas, indigestion, pressure, swelling, bloating, cramps)
- Nausea, diarrhea, constipation, or frequent urination
- Loss of appetite
- Feeling of fullness even after a light meal
- Weight gain or loss with no known reason
- Abnormal bleeding from the vagina

These symptoms may be caused by ovarian cancer or by other, less serious conditions. It is important to check with a doctor about any of these symptoms.

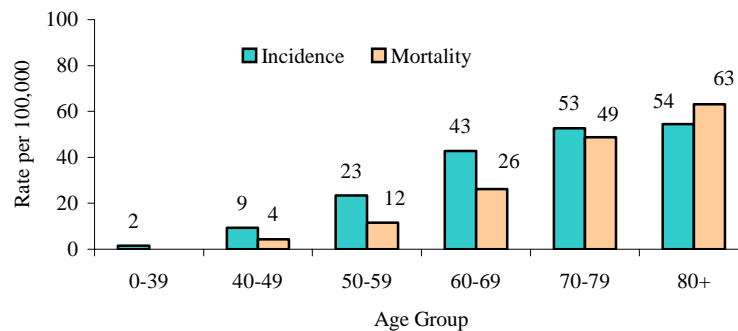
What are the Leading Causes of Cancer Incidence and Mortality in Women?

| Cases | Deaths |
|----------------------|------------------------|
| Breast | Lung & Bronchus |
| Lung & Bronchus | Breast |
| Colon & Rectum | Colon & Rectum |
| Uterine Corpus | Pancreas |
| Ovary | Ovary |
| Non-Hodgkin Lymphoma | Non-Hodgkin Lymphoma |
| Melanoma | Leukemias |
| Uterine Cervix | Corpus and Uterus, NOS |
| Pancreas | Multiple Myeloma |
| Thyroid | Stomach |

Ovarian cancer is the fifth most common cancer diagnosed among women in Georgia. One in 57 American females will develop ovarian cancer in her lifetime.

At What Age is Ovarian Cancer Most Often Diagnosed?

Georgia Ovarian Cancer Incidence (1999-2003) and Mortality (2000-2004) by Age Group



Although ovarian cancer incidence and mortality rates are highest in older women, ovarian cancer may also occur in younger women. In Georgia, women over the age of 70 have the highest rate of ovarian cancer. Mortality rates steadily increase with age; the highest mortality rates are seen in women 80 years of age and older. Before the age of 40, ovarian cancer deaths are very rare, but they do occur occasionally. Every year, about 54 Georgia women under 40 years of age die from ovarian cancer.

What is the Treatment for Ovarian Cancer?

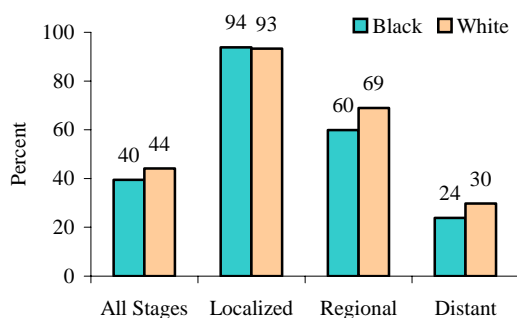
Each type of treatment has benefits and side effects. Age, overall health, and the stage of the cancer are all factors that need to be considered. Staging is a standardized way to summarize information about how far a cancer has spread from its point of origin. In situ ovarian cancers are those in which the tumor has not invaded or penetrated surrounding tissue. In the localized stage, the tumor is confined to the ovary. In the regional stage, the tumor has spread to the surrounding tissues such as the fallopian tubes and uterus. Distant ovarian cancers have spread to sites such as the liver, lung, spleen, and brain.

There are three main types of treatment for ovarian cancer: surgery, radiation therapy, and chemotherapy. Most women have surgery and chemotherapy, rarely radiation therapy is used for treating ovarian cancers. Depending on the stage of cancer, multiple treatment modalities may be used at the same time or one after another.

- Surgery:** This is the usual initial treatment for women diagnosed with ovarian cancer. The ovaries, the fallopian tubes, the uterus, and the cervix are usually removed. This operation is called a hysterectomy with bilateral salpingo-oophorectomy. Often, the surgeon also removes the omentum (the thin tissue covering the stomach and large intestine) and lymph nodes in the abdomen and pelvis. Staging during surgery (to find out whether the cancer has spread) generally involves removing lymph nodes, samples of tissue from the diaphragm and other organs in the abdomen, and fluid from the abdomen. If the cancer has spread, the surgeon usually removes as much of the cancer as possible in a procedure called tumor debulking. Tumor debulking reduces the amount of cancer that will have to be treated later with chemotherapy or radiation therapy.
- Chemotherapy:** Intraperitoneal chemotherapy can be given directly into the abdomen and pelvis through a thin tube. The drugs destroy or control cancer in the abdomen and pelvis. Systemic chemotherapy is given using anti-cancer drugs that are injected into a vein or taken by mouth. These drugs reach all areas of the body through the bloodstream, making them potentially useful against cancers that have metastasized to other parts of the body.
- Radiation Therapy:** This treatment uses x-rays or other type of radiation to kill cancer cells. There are two types of radiation therapies: External – radiation comes from a machine and is directed to the cancer. Internal – radioactive material/implants are put directly into or near the cancer.

Who Survives Ovarian Cancer?

Percent of US Women Surviving Five Years after Diagnosis of Ovarian Cancer, by Stage of Disease and Race. 1996-2002



Percent of Ovarian Tumors found by Stage of Disease and Race, US Women and Georgia Women

| | Localized | Regional | Distant |
|-----------|-----------|----------|---------|
| US White† | 18% | 7% | 69% |
| US Black† | 17% | 7% | 67% |
| GA White† | 21% | 20% | 51% |
| GA Black† | 16% | 18% | 52% |

*Unstaged tumors are not shown.

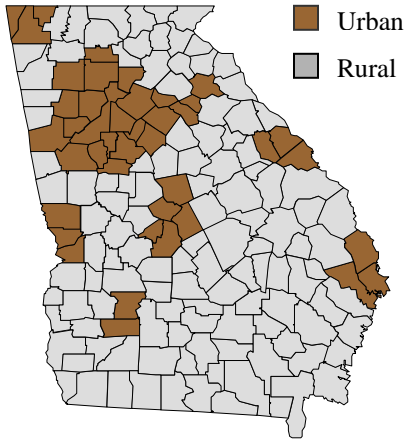
†US data is for 1996-2002. GA data is for 1999-2003

Finding the cancer early improves the chances that it can be treated successfully. Nine out of 10 women treated for early ovarian cancer will live longer than 5 years after the cancer is found. Unfortunately, there is no reliable test for finding ovarian cancer early, but several large studies are in progress to learn how best to find ovarian cancer in its earliest stage.

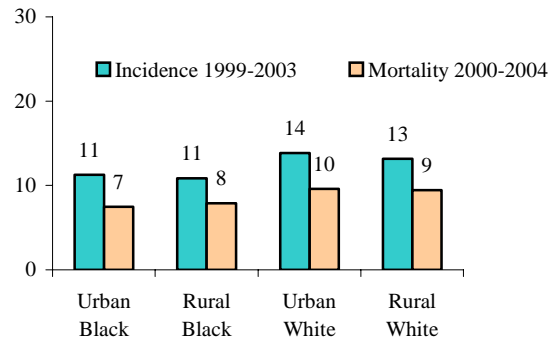
Five-year survival for tumors found in the localized stage is 94 percent among US black females and 93 percent among US white females. If the cancer spreads to organs away from ovary (distant stage), five-year survival drops to about 24 percent for US black females and 30 percent for US white females. In Georgia, about 21 percent of white females and about 16 percent of black females are diagnosed at a localized stage.

How Does Ovarian Cancer Vary by Region?

Urban and Rural Counties in Georgia



Georgia Ovarian Cancer Incidence and Mortality Rates* by Geography

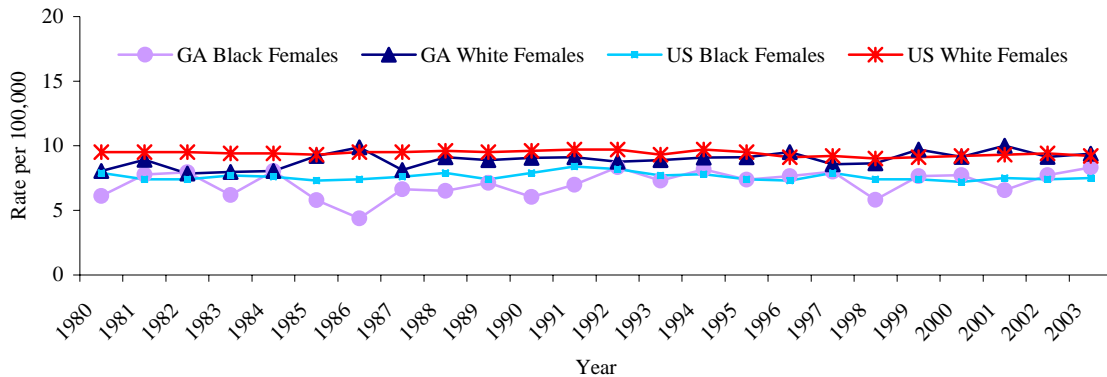


*Rates are age-adjusted to 2000 US population

Incidence (1999-2003) and mortality (2000-2004) rates for urban black females were similar to rates for rural black females. Incidence (1999-2003) and mortality (2000-2004) rates for urban white females were similar to rates for rural white females.

How Does Georgia Compare with the United States?

Ovarian Cancer Mortality Rate*, by Race, Georgia vs US, 1980-2003



From 1980 to 1998, the ovarian cancer mortality rates among Georgia females were lower than the rates among US females. Since 1999, the rates among GA females are similar to those among US females.

Where Can I Find Out More about Ovarian Cancer?

You can learn more about ovarian cancer from the following organizations:

American Cancer Society

Telephone: 1-800-ACS-2345

Internet Address: <http://www.cancer.org>

National Cancer Institute, Cancer Information Service

Telephone: 1-800-4-CANCER

Internet Address: <http://www.nci.nih.gov>

Technical Notes

Definitions:

Age-adjusted rate: A rate calculated in a manner that allows for the comparison of rates derived from populations with different age structures.

Cancer incidence rate: The number of new cancer cases occurring in a population during a specified period of time. Often expressed per 100,000 population.

Cancer mortality rate: The number of cancer deaths occurring in a population during a specified period of time. Often expressed per 100,000 population.

Data Sources:

The number of deaths and mortality rates for the state of Georgia were obtained from the Georgia Department of Human Resources, Division of Public Health, Vital Records Branch. The number of deaths and mortality rates for the United States were obtained from the National Center for Health Statistics, Centers for Disease Control and Prevention (CDC). Mortality data were coded using ICD-9 codes (1980-1998) and ICD-10 codes (1999-2004). The ICD-9 code for ovarian cancer is 183.0, while the ICD-10 code for ovarian cancer is C569.

The number of new cases and incidence rates for the state of Georgia were obtained from the Georgia Department of Human Resources, Division of Public Health, Georgia Comprehensive Cancer Registry. The number of new cases and incidence rates for the United States were obtained from the North American Association of Central Cancer Registries (NAACCR). Incidence data were coded using ICD-O-3 codes. The ICD-O-3 code used for ovarian cancer is C569.

Cancer stage and survival data for the United States were obtained from the Surveillance, Epidemiology, and End Results (SEER) program, National Cancer Institute.

Population projections for 2005 were obtained from the Office of Planning and Budget for the state of Georgia. Population estimates for 1980-2003 and the 2000 US standard population were obtained from the US Bureau of the Census.

Methods:

Mortality rates were calculated per 100,000 population and age-adjusted by the direct method to the 2000 US standard population. Except where calculated to show trends, the mortality rates are five-year average annual rates for the period 2000 through 2004. Incidence rates were calculated per 100,000 population and age-adjusted by the direct method to the 2000 US standard population. Rates were calculated for 1999-2003, as these are the years in which Cancer Registry data are greater than 95% complete.

The estimated number of cases for 2006 was calculated by multiplying age-specific incidence rates for 1999-2003 by age-specific population projections for 2006. The estimated number of deaths for 2006 was calculated by multiplying age-specific mortality rates for 2000-2004 by age-specific population projections for 2006.