Age:14-18

Cancer Conquerors
Ovarian Cancer and Statistics

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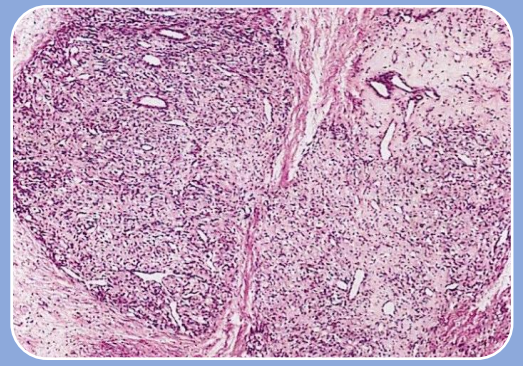
Abstract

Background: In the past year, around 1.6 million cases of cancer were diagnosed of which 20,000 cases were of ovarian cancer. The American Cancer Institute projects almost 80,000 cases of cancer in North Carolina alone of which 470 cases are of ovarian cancer this year. **Aim**: The team hoped to obtain a general knowledge of ovarian cancer, types, treatments, and risk factors in addition to determining a correlation between race and ovarian cancer and educate the public. **Methods**: Team members researched the broad aspects of ovarian cancer (types, risk factors, treatment, statistics, relation to race) using published research papers from PubMed, NCBI, medical institute, and the Center for Disease Control, then gathered to evaluate and analyze the different aspects of ovarian cancer, onset, and treatment. **Discussion**: Research shows that there is no direct correlation between pregnancy and the likelihood of ovarian cancer. It is equally likely in those women who have never been pregnant. Epithelial ovarian cancer is the most prominent form across all women. Over the years, statistics show that the projections for cases of Ovarian cancer are increasing. Ovarian cancer does show a strong likelihood of onset if it is prevalent in a woman's family history. **Conclusion**: All women should be careful of their life choices. Those who have a history of ovarian cancer in their families must be precautious and consult a doctor to prevent the onset or catch it at a treatable stage.

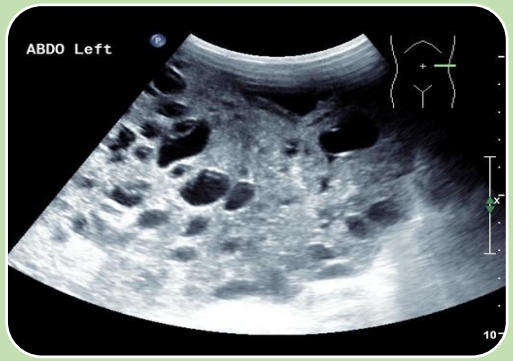
Epithelial

- Malignant cancer cells form in the linings of the fallopian tubes or the peritoneum.
- Severe and persistent pain in the abdomen can hint epithelial ovarian cancer.
- Some ovarian, fallopian tube, and primary peritoneal cancers are caused by inherited gene mutations (changes).
- Hereditary ovarian cancer makes up about 20% of all cases of ovarian cancer. There are three hereditary patterns: ovarian cancer alone, ovarian and breast cancers, and ovarian and colon cancers.
- There are tests that can detect gene mutations. These genetic tests are sometimes done for members of families with a high risk of cancer.



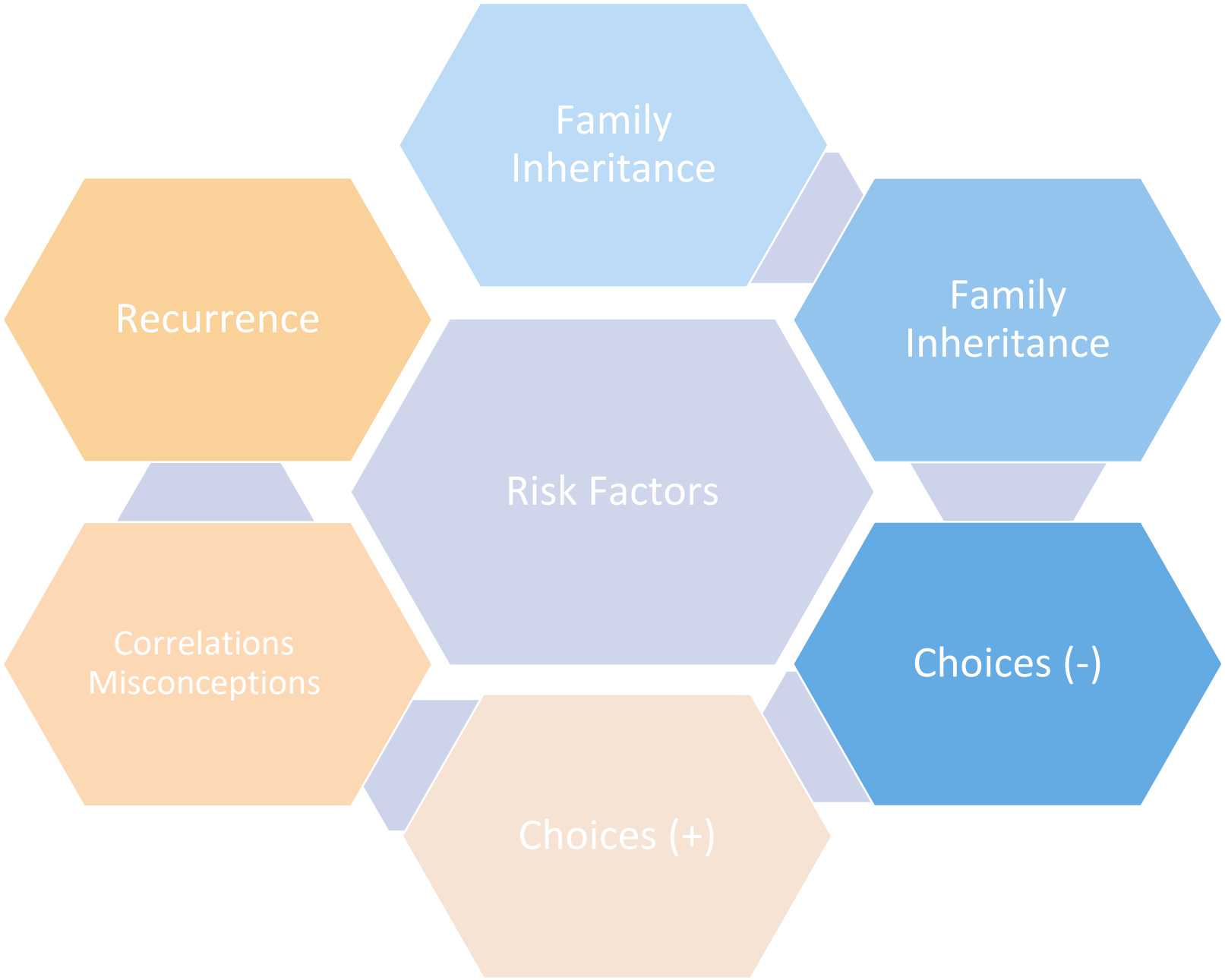
Stromal Cell

- Sex cord-stromal tumors frequently present with signs of hormonal production, such as hirsutism and virilization, menstrual changes, or early puberty as well as signs and symptoms of a pelvic mass, often found in adolescents and young adults, except for adult granulosa cell tumors which usually occur later.
- Granulosa cell tumor4 of the ovary is a rare type of ovarian cancer that accounts for approximately 2% of all ovarian tumors. This type of tumor is known as a sex cord-stromal tumor and usually occurs in adults. Granulosa cell tumors of the ovary cause higher than normal levels of estrogen in a woman's body.
- Symptoms may include abnormal uterine bleeding (ovarian stromal tumors sometimes produce estrogen), bloating, irregular menstrual cycles, excessive testosterone, premature menopause, facial and body hair growth.



Germ Cell

- Most germ cell tumors are benign and affects eggs in the ovaries. Once affected, it is called a dermoid cyst.
- Mature teratomas are the most common type of benign germ cell tumor.
- Women often choose to undergo ovarian cystectomy to cut out the part of the ovary that has the tumor
- There may be few symptoms: Abdominal pain or constipation may occur, and when the tumor gets bigger, an abdominal mass may be evident.
- In cases where tumors have not spread beyond the ovary, they are treated by surgical removal of the ovary. If they have spread beyond the ovary, chemotherapy is typically recommended in addition to surgery.


Family Inheritance
Recurrence
Family Inheritance
Risk Factors
Correlations Misconceptions
Choices (-)
Choices (+)

Choices

(- correlation)

- Oral contraceptive
- Female sterilization, hysterectomy, prophylactic oophorectomy
- Parity (births) & gravidity (pregnancies)
- breastfeeding

Choices

(+ correlation)

- In Vitro Fertilization (borderline and low malignant tumors)
- Estrogen therapy after menopause (taken with progesterone slightly less risk)
- Smoking (mucinous)
- 1st pregnancy after 35

Positive Correlations

- Obesity
- Late age at menopause
- infertility

Misconceptions

- Irregular periods a guarantee of cancer
- Androgens, diet, and talcum powder have unclear effects

Predictors of Recurrence

- Age
- FIGO (The international federation of gynecology and obstetrics)
  - pathologic T
  - pathologic M
- Residual disease after first line of treatment (chemo + surgery)

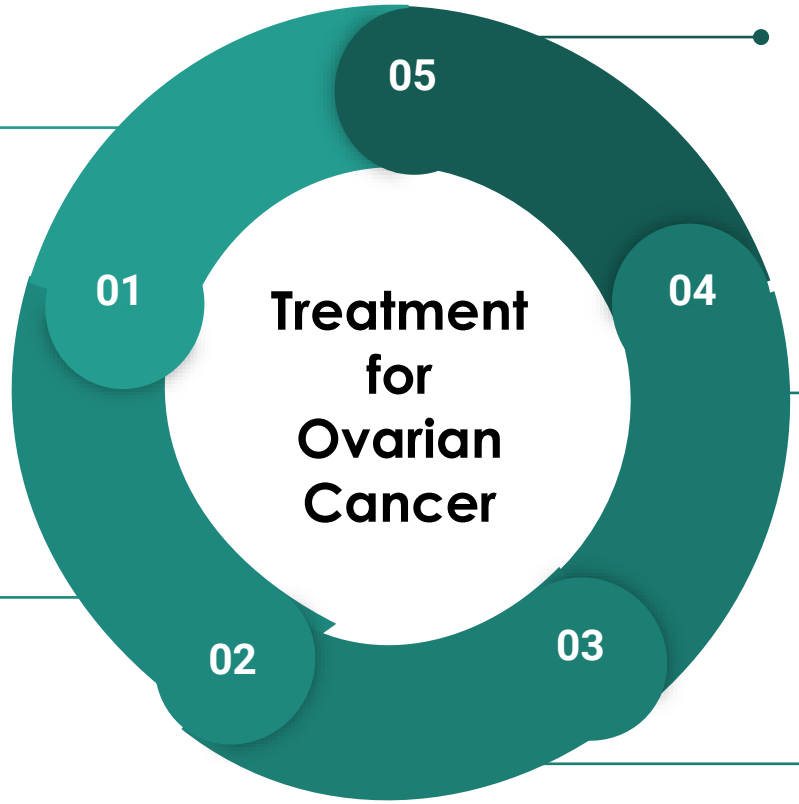
Family Inheritance

20-25% of ovarian cancer cases are inherited

- Autosomal dominant
- Hereditary Breast and Ovarian Cancer Syndrome (BRCA 1 risk: 35-70%)(BRCA2 risk: 10-30%); Ashkenazi Jews esp. at risk

Family Inheritance

- **PTEN tumor hamartoma syndrome(cowden):** associated with thyroid issues, ovarian, endometrial, and breast cancer
- **Hereditary nonpolyposis colon cancer(lynch):** high risk for colon & endometrial cancer; 10% risk for ovarian cancer
- **Peutz-Jeghers Syndrome:** mutation of STK11 ; gastrointestinal problems/cancers; risk for ovarian cancer (epithelial & sex cord tumor with annular tubules).
- **MUTYH-associated polyposis:** polyps in small intestine & colon; high risk for colon cancer, ovarian cancer and bladder cancer[3].



Surgery

a. Epithelial Ovarian Cancer

1. *Staging* - maps how far cancer has spread from the ovary, usually by removing the uterus, along with a removing both ovaries and fallopian tubes.
2. *Debulking* - removes as much of the tumor as possible, the goal is to leave behind no visible cancer or no tumors larger than 1 cm

Chemotherapy

a. *Epithelial Ovarian Cancer* - a typical course of 3-6 cycles of treatment, depending on the stage and type
b. *Intraperitoneal Therapy* - stage III ovarian cancer (hasn't spread outside the abdomen) and has been optimally debunked
c. *Germ Cell Tumors* - a combination of chemo, consisting of the BEP drugs d. stromal tumors-not usually treated with chemotherapy but if they are usually through the use of PEB

Hormonal Therapy

a. *LHRH agonists* - they switch off estrogen production by the ovaries
b. tamoxifen -it keeps any estrogens circulating in the woman's body from stimulating cancer cell growth
c. *aromatase inhibitors* - lower estrogen levels and can treat some recurring ovarian cancers

Radiation Therapy

a. *external beam radiation therapy* - most common type, it's like getting an x-ray but the radiation is stronger
b. *brachytherapy* - delivers the radiation internally, through a device placed in the body

Targeted Therapy

a. *Bevacizumab* - an angiogenesis inhibitor that slows and shrinks the growth of advanced epithelial ovarian cancers works better when paired with chemotherapy, helps slow the growth of tumors
b. *PARP inhibitors* - poly-ribose inhibitors help repair damaged DNA inside cells, kills mutated cells

Statistics

Prevalence

- 2.5% of all cancers in women are Ovarian cancer[10].
- Approximately 1.3% of women will be diagnosed with Ovarian cancer in their lifetime[12].
- About 22,530 women receive a new diagnosis of ovarian cancer in 2019[11].
- Risk of developing Ovarian cancer is 1 in 78[11].

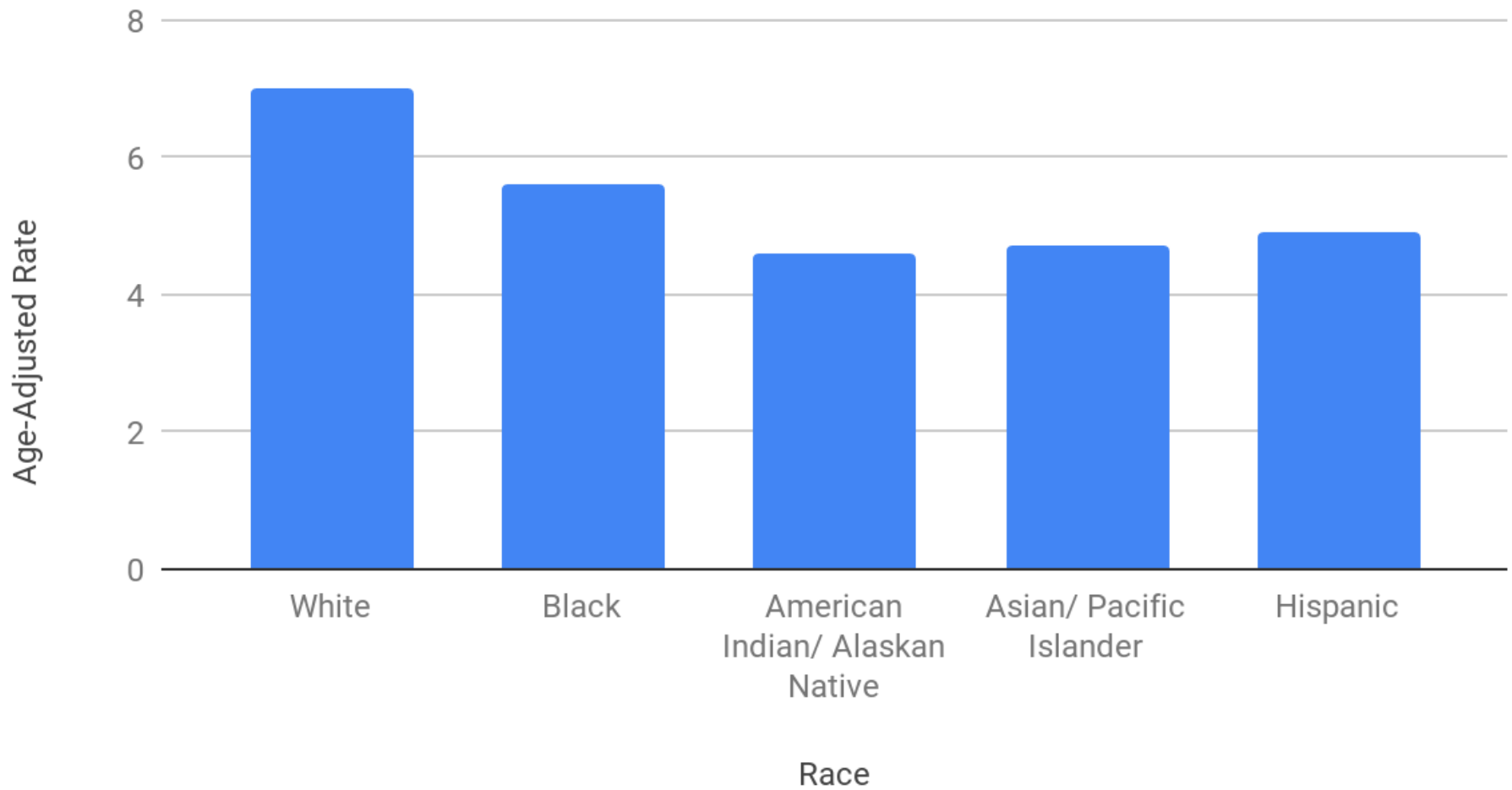
Survival

- Fifth in cancer deaths among women11.
  - More deaths than from cancer in any other female reproductive part11.
- About 13,980 women die from ovarian cancer in 201911.
- Chance of death from Ovarian Cancer is 1 in 10811.
- Only 46.5% survive five years10.

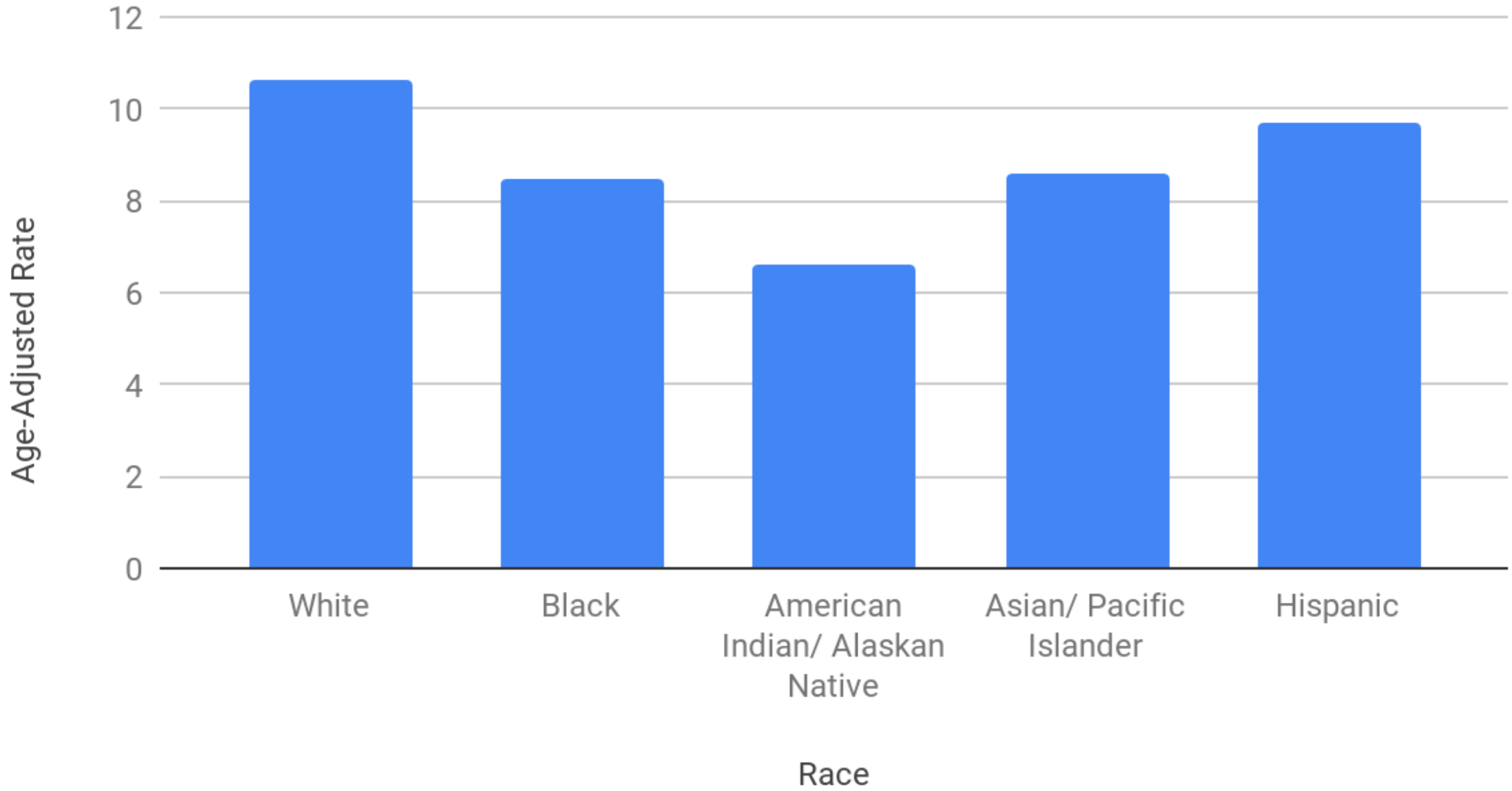
Development

- Most prominent in women ages 55-64, with the median age being 6310.
- 20-25% of women diagnosed with Ovarian Cancer have a genetic tendency to develop the disease7.
- African American women have higher mortality rates than other races13.
- Women with a history of Ovarian, Breast, Uterine, Colon, or Rectal cancer have greater chances of developing Ovarian cancer7.

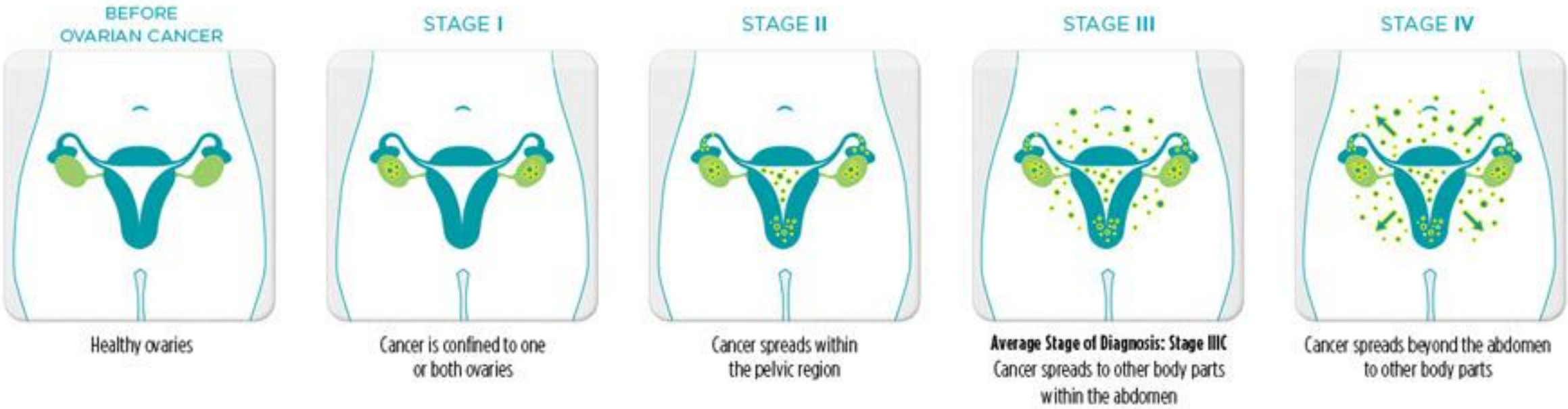
Rate of Cancer Deaths by Race



Rate of New Cancers by Race



Stages of Progression



OVARIAN CANCER

survival rates

	Invasive epithelial ovarian cancer	Ovarian stromal tumors	Ovarian germ cell tumors
Stage 1	90%	95%	98%
Stage 2	70%	78%	94%
Stage 3	39%	65%	87%
Stage 4	17%	35%	69%

Source: https://www.cancer.org/cancer/ovarian-cancer/detection-diagnosis-staging/survival-rates.html

healthline

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