



**GEORGIA
CANCER CENTER**
AUGUSTA UNIVERSITY



Cancer, Risk Factors, and Prevention

Cancer Information and Awareness

Christine O'Meara, MA, MPH
Community Outreach Coordinator

Maryclaire Regan, MPH
Community Program Coordinator

Teledermatology in Rural Georgia

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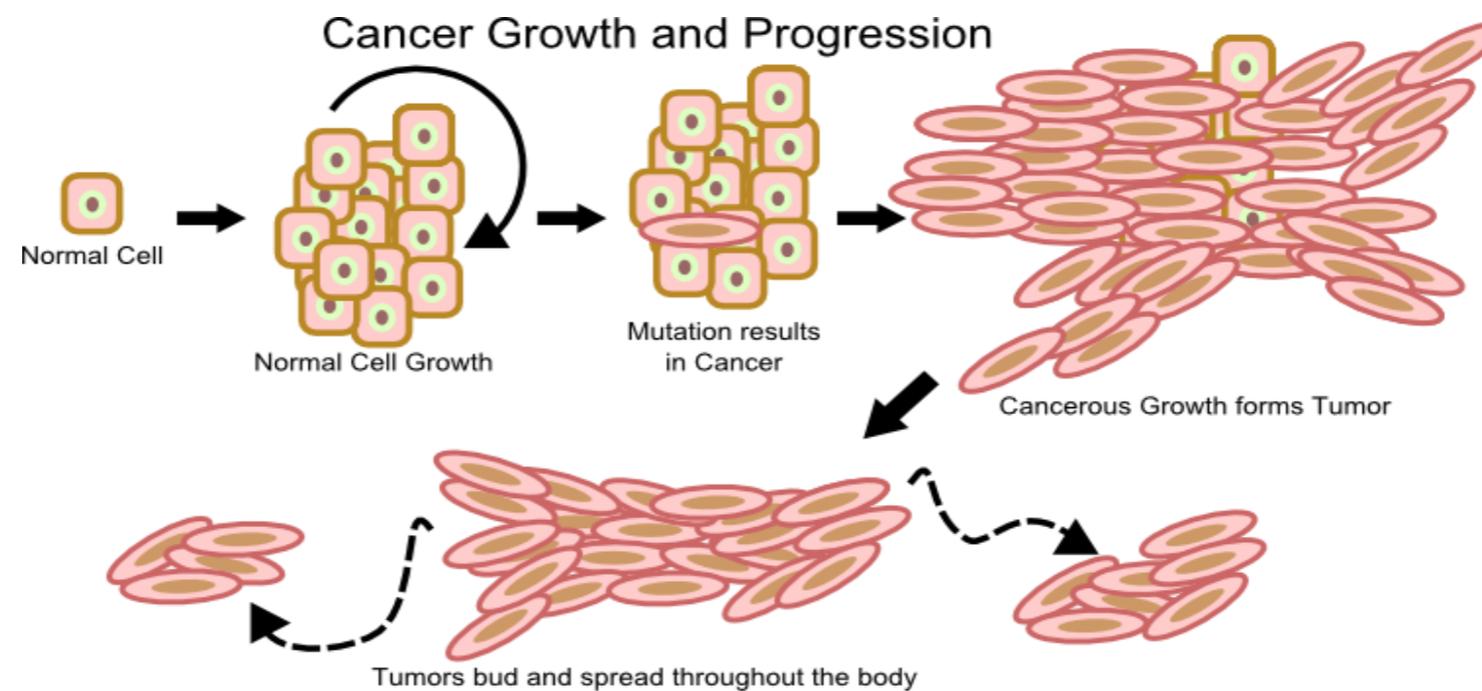
What is Cancer?

- Cancer cells are a person's own cells that have changed
 - DNA damage within the cell
- When a person's immune system does not destroy abnormal cells, they can grow without control and become cancer.

What is Cancer?

Cancer is characterized by:

- Abnormal cells multiply without control
- Abnormal cells spread (metastasis)



What is Cancer?

Not just one disease; More than 100 different cancers

- **Classified by:**

- Tissue type
- The place where it starts

- **Cancer can develop in:**

- Any organ
- Glands
- Systems (lymph, blood)

- **Cancer Types:**

- **Solid** (tumors); accounts for 8 out of 10 cancers
- **Liquid** (blood cancers)

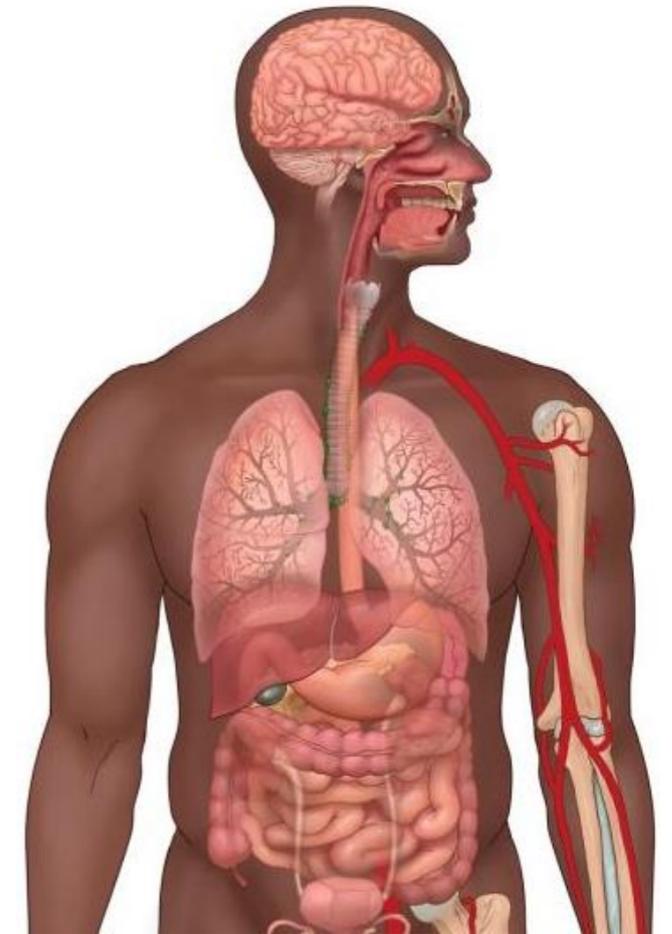


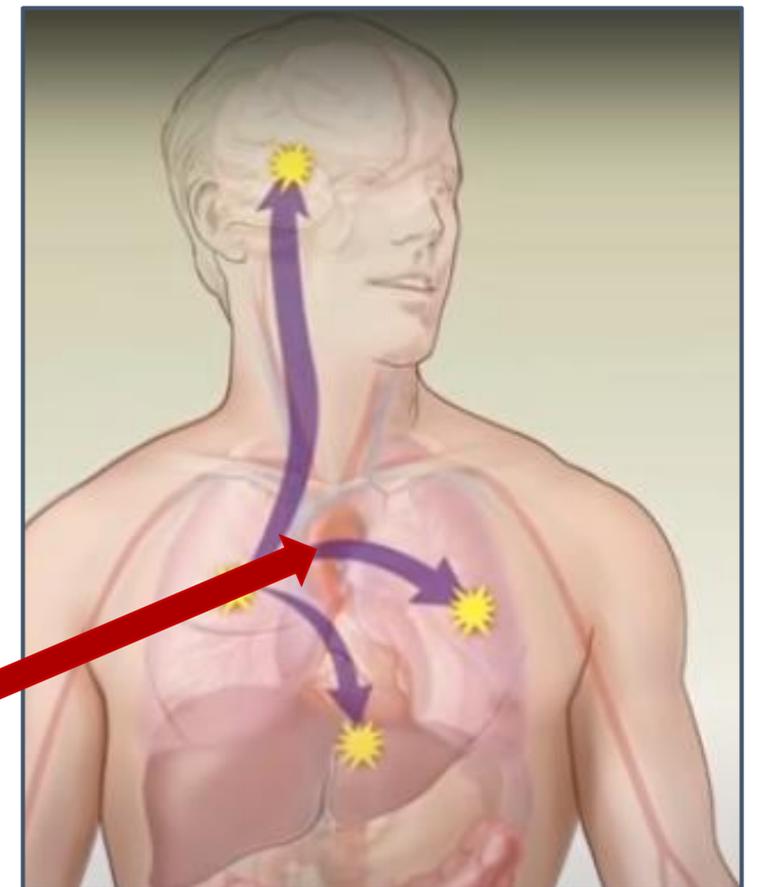
Image: Joshua Klein

How Cancer Spreads in the Body

Metastasis

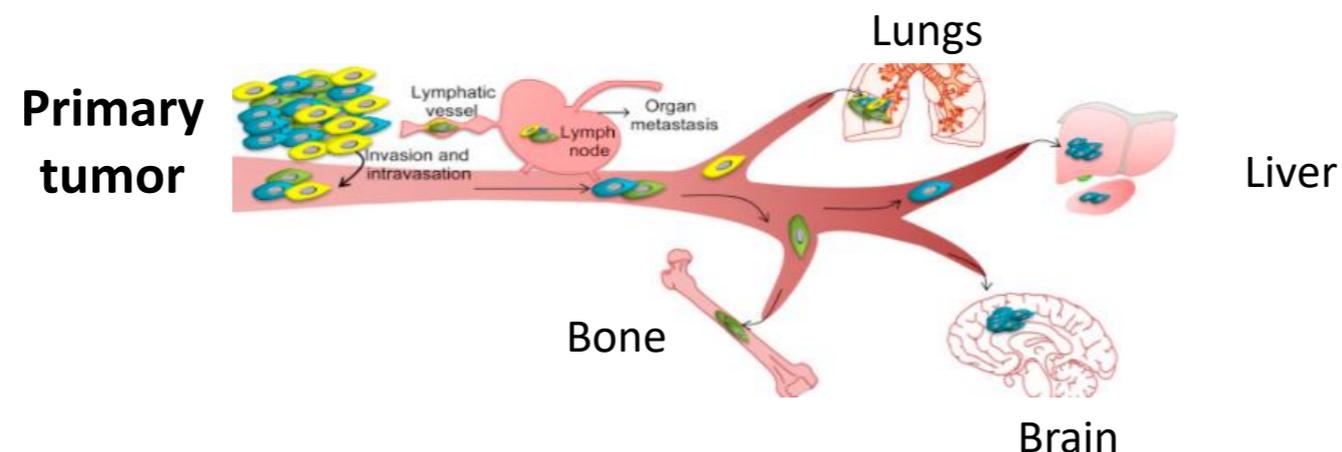
- Cancer cells break off from the place where the cancer starts (primary tumor) and move to other parts of body
- Cancer cells spread, grow, and affect other tissues and organs

Original (primary) tumor



How Cancer Spreads in the Body (Metastasis)

- **Cancer cells spread by:**
 - Invading tissue of nearby healthy cells
 - Entering the lymph system
 - Penetrating the blood vessels
 - Traveling through the lymph and blood to other parts of the body such as bones, brain, liver, or lungs



How Cancer Spreads in the Body (Metastasis)

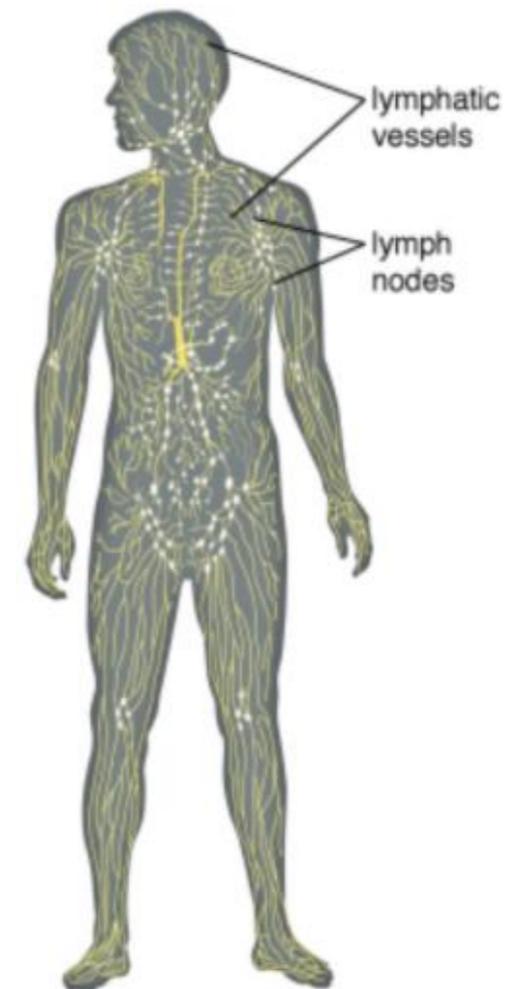
Lymph System (lymphatic)

- Network of tubes or vessels, tissues, and organs that are part of the immune system.

Lymph nodes

- Filter the lymph (fluid)
- Create, store, and carry white blood cells (lymphocytes) that fight infection and disease.
- Help rid body of toxins and waste materials.

Cancer cells travel through lymph vessels to other parts of the body.

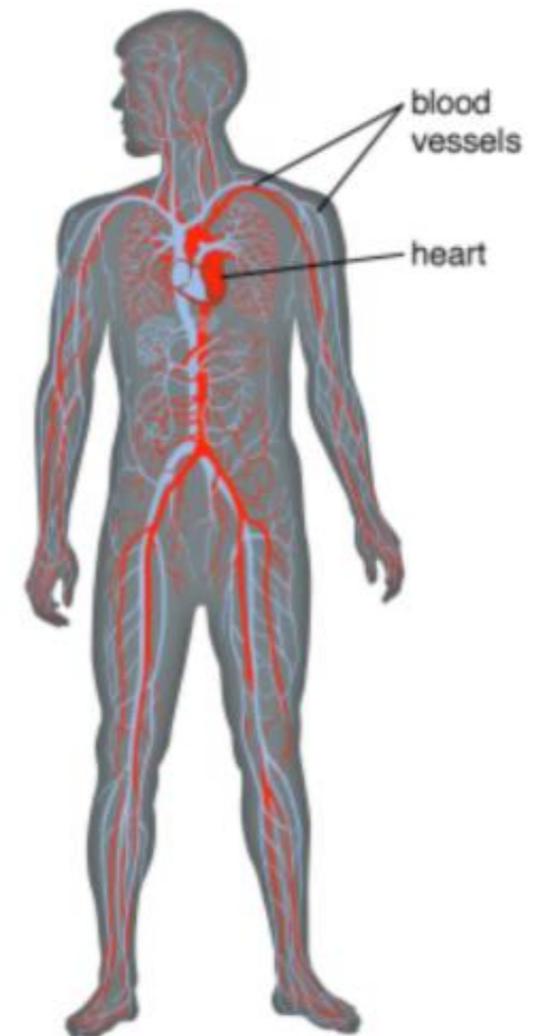


How Cancer Spreads in the Body (Metastasis)

Blood and Circulatory System

- Made up of the heart, blood, and blood vessels.
- Carries nutrients, hormones, and oxygen to cells in the body and removes wastes.
- Also called the cardiovascular system.

Cancer cells travel through blood vessels to other parts of the body.



What is Cancer Staging?

Cancer staging helps the doctor and care team determine:

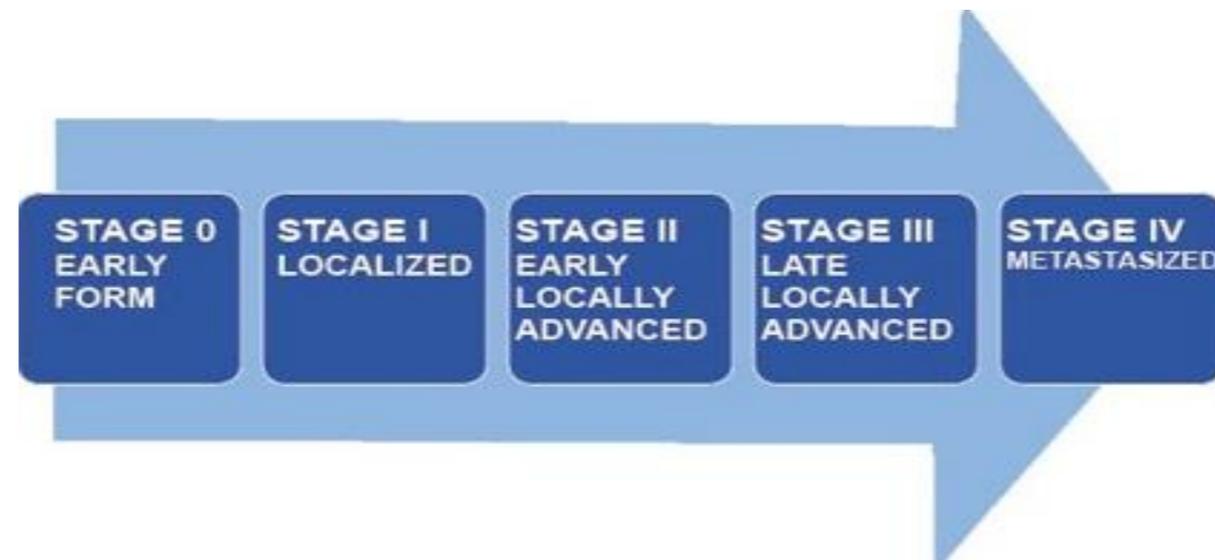
- Patient's outlook or prognosis
- How aggressive the cancer is
- The best treatment to pursue, including clinical trials options
- Clinical trials are research studies for new ways to treat cancer
- How well a treatment is likely to work

Staging is used to provide standard terms for health care providers.

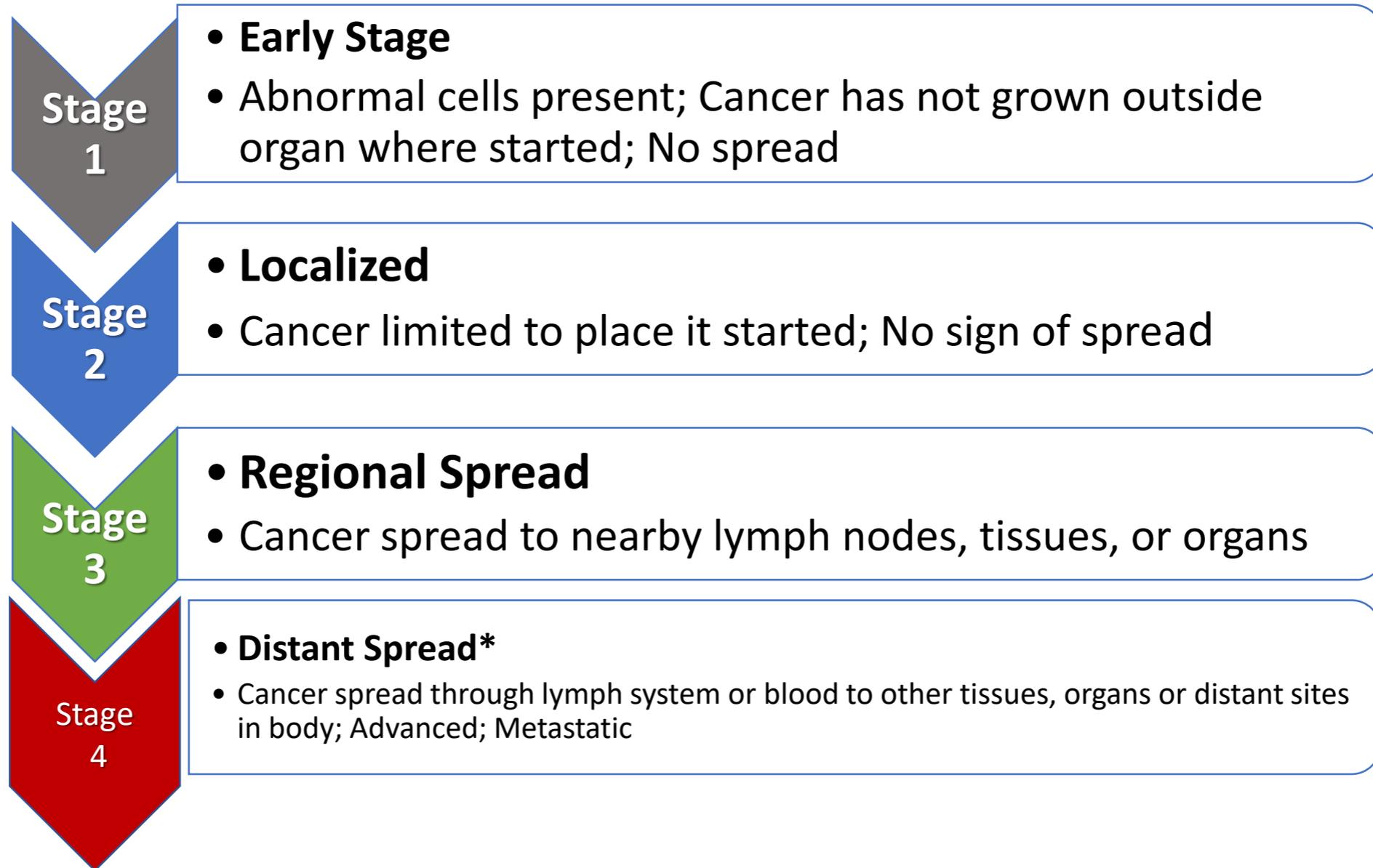
Cancer Staging

The cancer stage helps identify how much cancer is present (the size and/or extent of the original tumor), where it is located, and if it has spread.

- Cancer stages range from Stage 0 (early form) to Stage 4 (Stage IV).
- Sometimes letters (A, B, and C) are used to indicate other features of the cancer.



Cancer Stages



Clinical Staging Methods

- **Physical Exam**
- **Imaging Tests** – X-rays and scans
- **Scopes** – special equipment with tiny cameras to look inside the body (endoscopy exams)
- **Biopsy** – tissue sample removed by doctor
- **Lab tests** – to examine tissue, cells, blood, urine, stool, among others
 - **Tumor markers** – molecules indicating normal or abnormal processes.
 - Cancer biomarkers include: Proteins, DNA (genes), missing genes, gene mutations (changes), extra copies of genes, hormones, and other molecules.
Example: HER2 protein helps control cell growth.



Pathology Staging Methods

- Done during cancer surgery.
- Pathologists examine cells and tissue using high powered microscopes and run tests on tissue samples.
- Provides more precise information to help identify treatment options.



Staging and Grading Cancer

TNM Staging System – Most widely used system

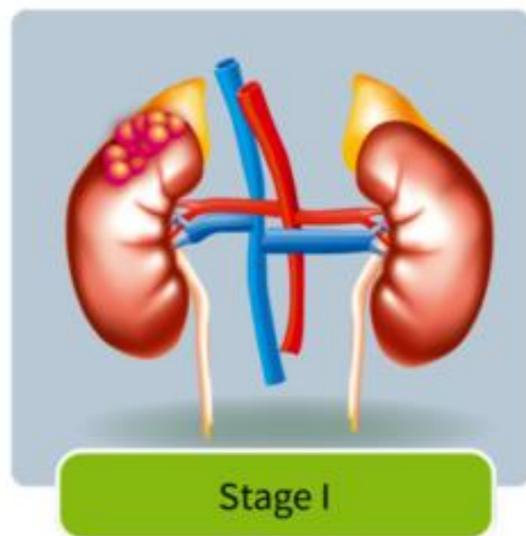
- **T = Tumor** - Size and extent of main or primary tumor where cancer started
- **N = Nodes** - Whether cancer spread to nearby lymph nodes
- **M = Metastasized** - Cancer has spread from primary tumor to other body parts

Tumor Grade

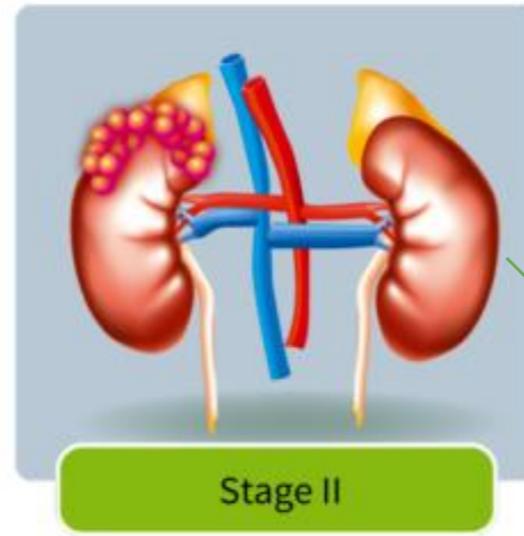
- Description of how abnormal tumor cells and tumor tissue looks under a microscope.
- A gauge of how quickly a tumor is likely to grow and spread.



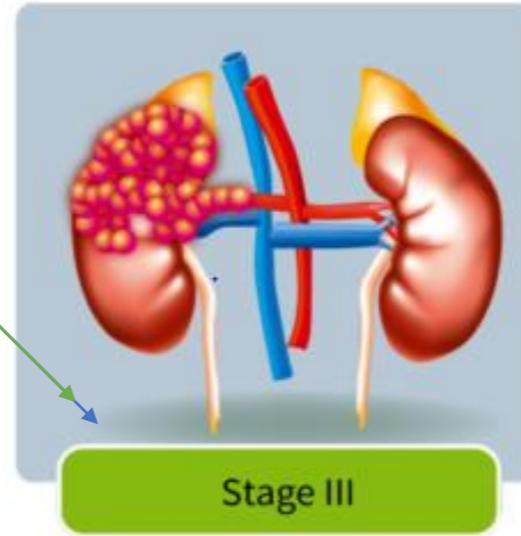
Example: Stages of Kidney Cancer



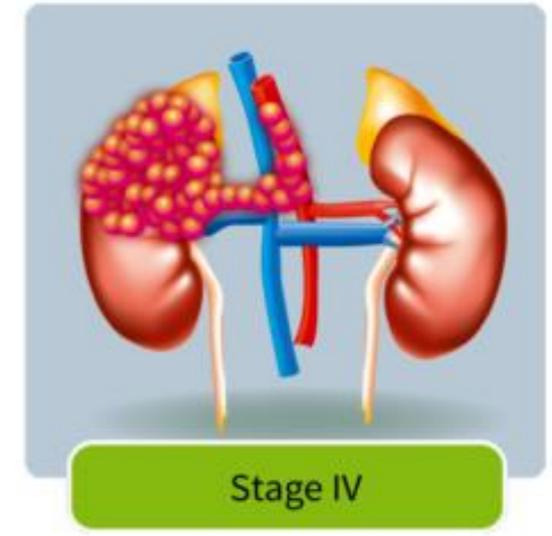
No Spread;
Cancer only
within kidney



Cancer has grown;
larger than 7cm;
Confined to kidney



Cancer has grown;
Moved nearby to
tissues outside the
kidney



Cancer has spread
widely outside the
kidney to lymph nodes
or other organs

Risks and Risk Factors

What are Risks and Risk Factors for Cancer?

Risks

- Anything that increases chances or risk of getting a disease
- Having a risk factor does not mean you will get a specific disease
- Some risk factors can be changed (modified) others cannot be changed

What are Risks and Risk Factors for Cancer?

Risk Factors that cannot be changed

Genes

Genetic material (DNA) we inherit from our parents

Account for 5-10% of cancers



Image: Journal of Cytology

What are Risks and Risk Factors for Cancer?

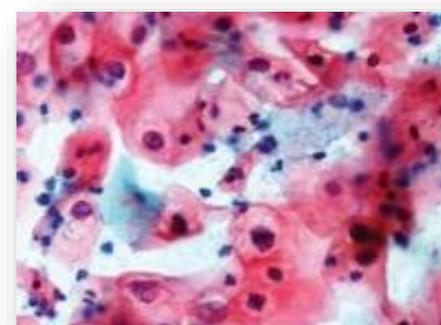
Genes



Environment



Viral and Bacterial Infections



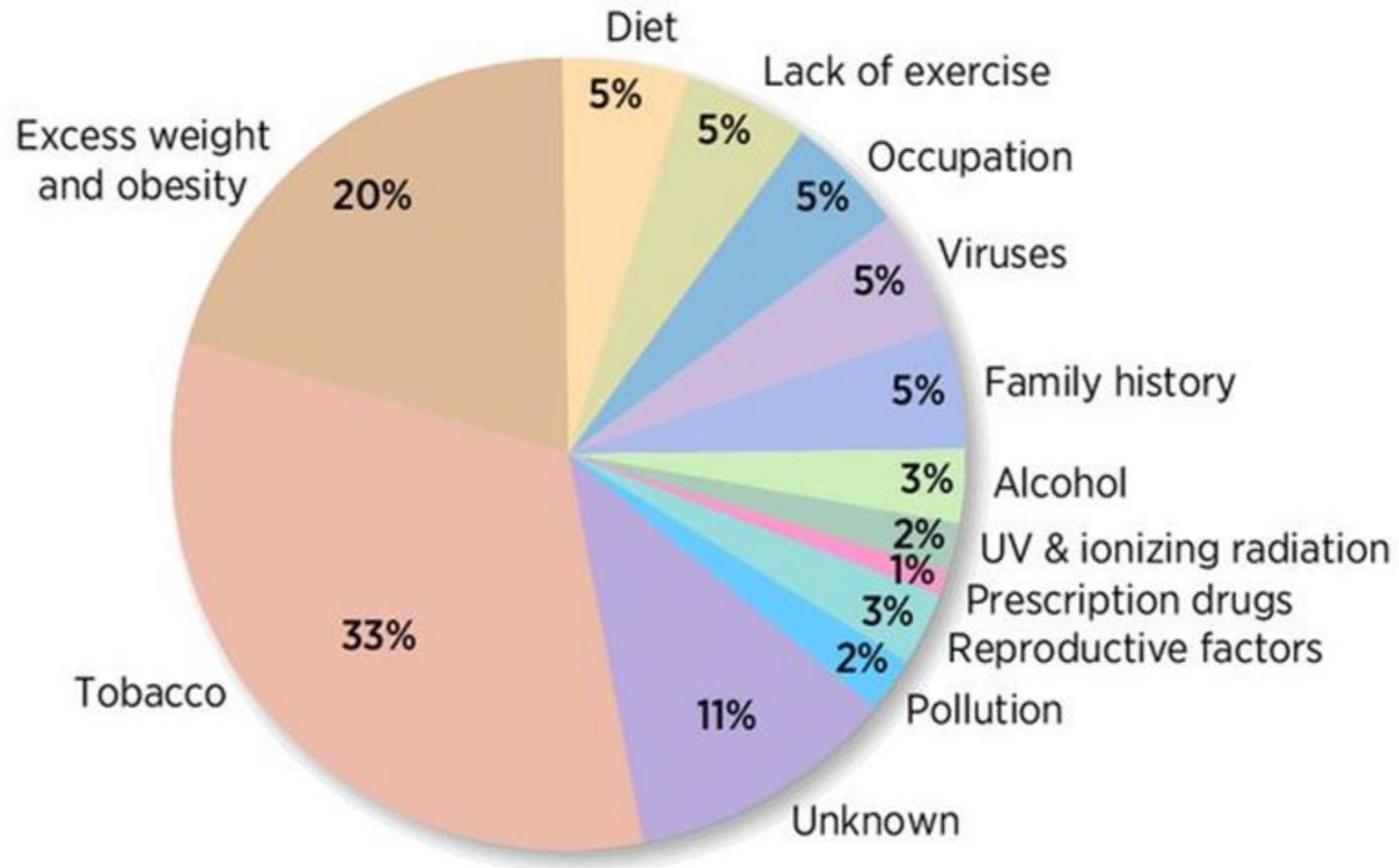
Social & Economic Factors



Lifestyle Behavior/Choices



Causes of Cancer



1/3 to 1/2 of cancer deaths in Western populations are linked to risk factors that can be changed. (2018)

You Can Lower Your Risk & Prevent Cancer

Avoid tobacco, including secondhand smoke or e-cigarette vapor (aerosol)

If you smoke tobacco, including e-cigarettes or spit tobacco:

It's never too late to quit!



You Can Lower Your Risk & Prevent Cancer

Avoid tobacco



Protect your skin from the sun



Prevent infections (such as HIV/AIDS, HPV, Hepatitis B, and Hepatitis C)

Avoid or limit alcohol use



Follow Cancer Screening Guidelines

Promoting Health, Preventing Cancer

Maintain a healthy weight



Eat well balanced meals

(fresh fruits, vegetables
& whole grains)

Stay physically active

- Exercise regularly – 4 hrs. week
- 2.5 hours moderate exercise weekly
or
- 1.25 hours vigorous exercise a week



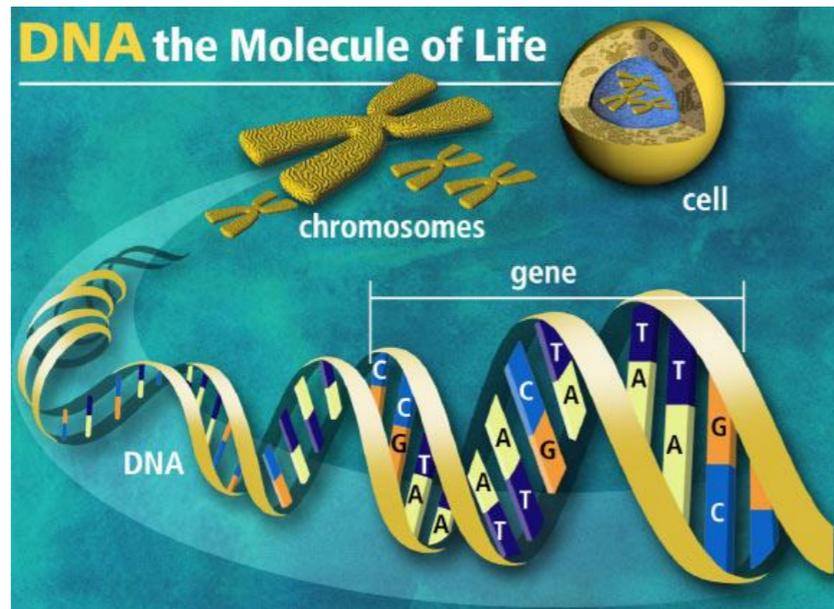
Promoting Health, Preventing Cancer



Sleep 8 hours

Know Your Family's Health History

Cancer risks vary;
May be related to inherited genes



Genetic Counseling

Assess risk of carrying a gene mutation or
developing a particular disease

Cancer Information & Sources

- National Cancer Institute [cancer.gov](https://www.cancer.gov)
- NCI SEER (Surveillance Epidemiology and End Results) database
Cancer Stat Facts: Prostate Cancer <https://seer.cancer.gov/statfacts/html/prost.html>
- American Society of Clinical Oncology (ASCO) [Cancer.net](https://www.cancer.net)
- American Cancer Society [cancer.org](https://www.cancer.org)
- American Institute for Cancer Research [aicr.org](https://www.aicr.org)
- Mayo Clinic [mayoclinic.org/diseases-conditions](https://www.mayoclinic.org/diseases-conditions)
- Medline Plus U.S. National Library of Medicine National Institutes of Health medlineplus.gov/prostatecancer.html
- Prostate Cancer Foundation [pcf.org](https://www.pcf.org)
- Georgia Cancer Center – [augusta.edu/cancer/community](https://www.augusta.edu/cancer/community)
- The Cancer Atlas canceratlas.cancer.org
- World Health Organization [who.int/health-topics/cancer#tab=tab_1](https://www.who.int/health-topics/cancer#tab=tab_1)
- WHO Country Cancer Profiles [who.int/cancer/country-profiles/en/](https://www.who.int/cancer/country-profiles/en/)

augusta.edu/cancer/community

Christine O'Meara 706-721-8353
comeara@augusta.edu

Maryclaire Regan 706-721-4539
mregan@augusta.edu

