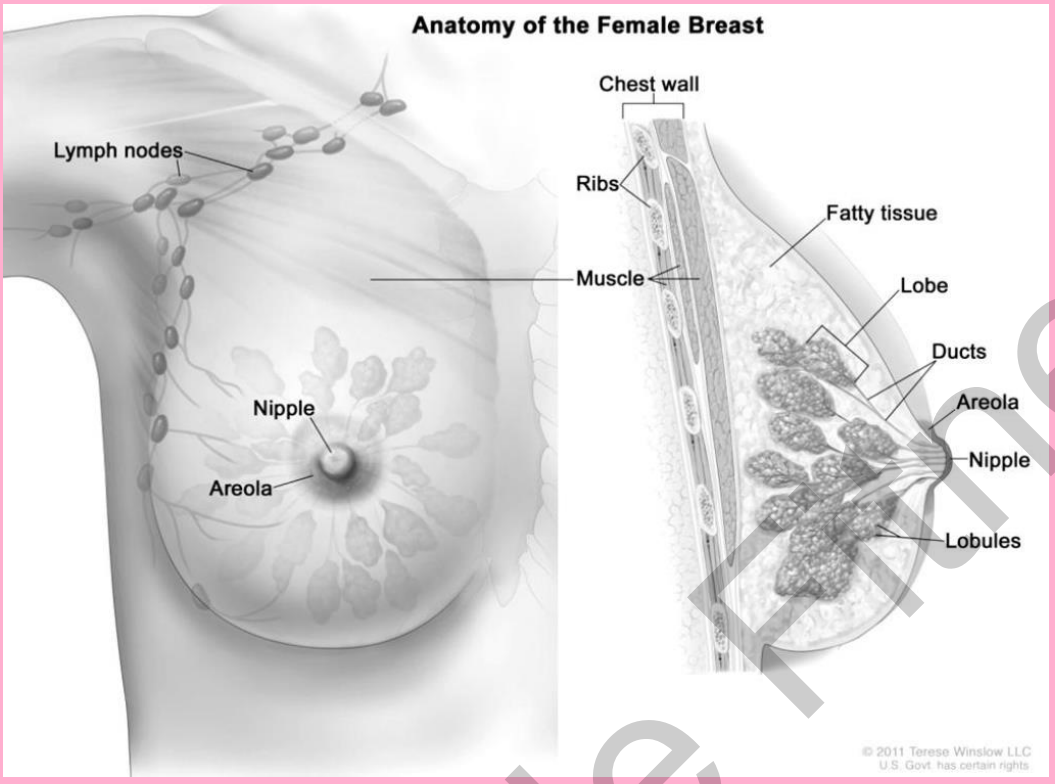
BREAST CANCER

What is Breast Cancer?	Breast cancer is a disease in which cells in the breast grow out of control. There are different kinds of breast cancer. The kind of breast cancer depends on which cells in the breast turn into cancer. Breast cancer can begin in different parts of the breast. A breast is made up of three main parts: lobules, ducts, and connective tissue. The lobules are the glands that produce milk. The ducts are tubes that carry milk to the nipple. The connective tissue (which consists of fibrous and fatty tissue) surrounds and holds everything together. Most breast cancers begin in the ducts or lobules. Breast cancer can spread outside the breast through blood vessels and lymph vessels. When breast cancer spreads to other parts of the body, it is said to have metastasized. *CDC (1)*
How does cancer Spread?	**There are three ways that cancer spreads in the body** **Tissue.** The cancer spreads from where it began by growing into nearby areas **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 **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 *NIH – NCI (2)*



NIH - NCI (National Cancer Institute) https://www.cancer.gov/types/breast/patient/breast-treatment-pdq#_148

Stage Groups

In breast cancer, stage is based on the size and location of the primary tumor, the spread of cancer to nearby lymph nodes or other parts of the body, tumor grade, and whether certain biomarkers are present. To plan the best treatment and understand your prognosis, it is important to know the breast cancer stage.

NIH – NCI (2)

There are 3 types of breast cancer stage groups

Clinical Prognostic Stage is used first to assign a stage for all patients based on health history, physical exam, imaging tests (if done), and biopsies

- The Clinical Prognostic Stage is described by the TNM system, tumor grade, and biomarker status (ER, PR, HER2).
- In clinical staging, mammography or ultrasound is used to check the lymph nodes for signs of cancer.

Pathological Prognostic Stage is then used for patients who have surgery as their first treatment.

- Prognostic Stage is based on all clinical information, biomarker status, and laboratory test results from breast tissue and lymph nodes removed during surgery.

Anatomic Stage is based on the size and the spread of cancer as described by the TNM system.

Risk Factors	• A personal history of benign (non-cancer) breast disease.
	• A family history of breast cancer in a first- degree relative (mother, daughter, or sister).
	• Inherited changes in the BRCA1 or BRCA2 genes or in other genes (such as PALB2) that increase the risk of breast cancer.
	• Breast tissue that is dense on a mammogram.
	• Exposure of breast tissue to estrogen made by the body. This may be caused by:
	  ○ Menstruating at an early age.
	  ○ Older age at first birth or never having given birth.
	  ○ Starting menopause at a later age.
	• Taking hormones such as estrogen combined with progestin for symptoms of menopause.
	• Treatment with radiation therapy to the breast/chest.
	• Drinking alcohol.
	• Obesity.
	
	Of all women with breast cancer, 5% to 10% may have a germline mutation of the genes BRCA1 and BRCA2. Specific mutations of BRCA1 and BRCA2 are more common in women of Jewish ancestry. The estimated lifetime risk of developing breast cancer for women with BRCA1 and BRCA2 mutations is 40% to 85%. Carriers with a history of breast cancer have an increased risk of contralateral disease that may be as high as 5% per year. Male BRCA2 mutation carriers also have an increased risk of breast cancer.
	
	Mutations in either the BRCA1 or the BRCA2 gene also confer an increased risk of ovarian cancer or other primary cancers. Once a BRCA1 or BRCA2 mutation has been identified, other family members can be referred for genetic counseling and testing.
	NIH – NCI (1)

Protective Factors	Protective factors and interventions to reduce the risk of female breast cancer include the following: • Estrogen use (after hysterectomy). • Exercise. • Early pregnancy. • Breast feeding. • Selective estrogen receptor modulators (SERMs). • Aromatase inhibitors or inactivators. • Risk-reducing mastectomy. • Risk-reducing oophorectomy or ovarian ablation. *NIH – NCI (1)*