Farah Zia

Farah Zeba Zia, M.D.

Medical Officer, Physician

Division of Cancer Treatment and Diagnosis (DCTD)



Dr. Farah Zeba Zia is a board-certified physician, specializing in medical oncology, with sub-specialization in breast and gynecologic cancers. She received her MD from The George Washington University School of Medicine, subsequently completing a residency in internal medicine from the George Washington University Hospital. Dr. Zia continued her training at the National Institutes of Health, completing a dual fellowship in Hematology and Oncology. She gained invaluable experience in oncology drug development and clinical trials during her tenure as a Medical Oncology Branch Fellow, and through participation in a Cancer Therapy Evaluation Program (CTEP/DCTD) Fellowship.

After working as community oncologist in Fairfax VA, Dr. Zia returned to the NIH to pursue her interest in investigative medicine, joining DCTD in 2007 as a medical officer. Currently, Dr. Zia serves as The Director of the Section of Clinical Research and Education in Integrative Oncology, with a focus on Integrative and Whole Person Health, especially as it relates to women with breast and gynecologic malignancies, across the cancer care continuum. She is an active member of the Warren G. Magnuson Clinical Center Medical Staff and continues patient care through the Center for Cancer Research (CCR) Women's Malignancies Branch (WMB), where she is an associate investigator on several breast and gynecologic cancer clinical trials. Dr. Zia has been recognized by Washingtonian Magazine as a Top Doctor in the field of Medical Oncology, as well as being recognized by Marquis Who's Who in America as a Top Doctor and Clinical Researcher.

Breast cancer



Farah Zia, MD
Medical Officer, Physician
Division of Cancer Treatment & Diagnosis

Attending Physician & Clinical Research:

Center for Cancer Research

Women's Malignancies Section

of the

Laboratory of Cancer Biology & Cell Genetics



Breast cancer



Breast anatomy

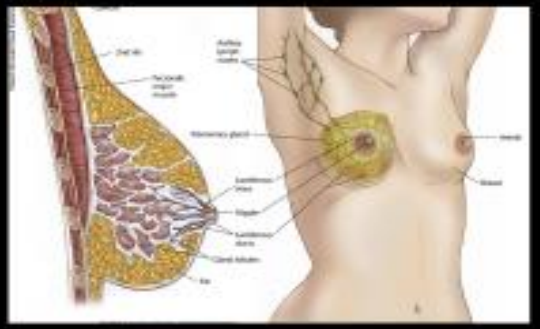
Breast Anatomy

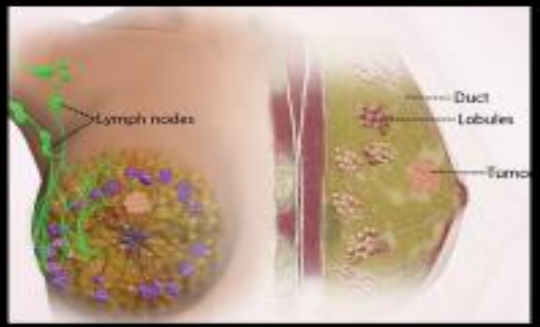
Embedded within fatty and fibrous tissue:

- 15-20 glands (lobes) which
- which each have
- smaller lobules that
- produce milk. They are
- inter-connected by ducts
- that carry the milk to the
- nipple.

Breast Cancer develops in the breast cells and progresses in stage

- **About 90% of all breast cancers start in the ducts or lobes of the breast**





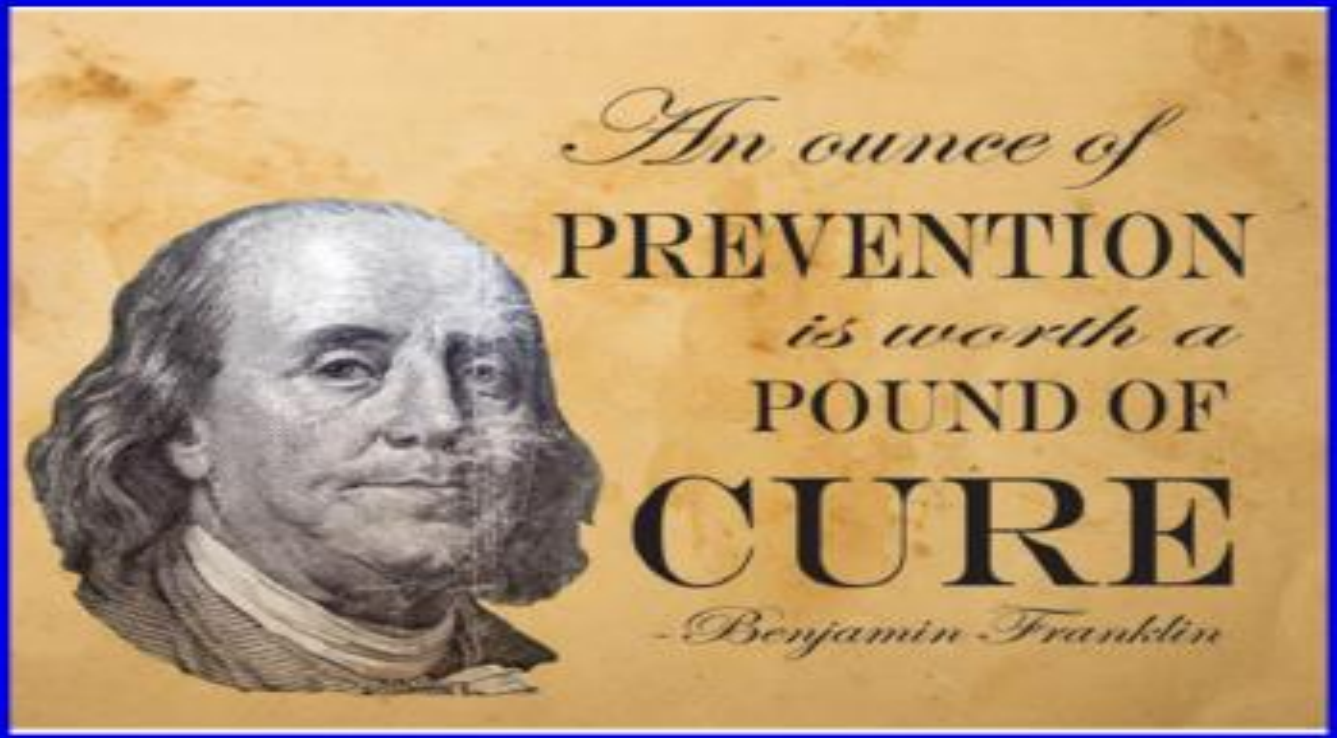
Breast Cancer

- *Precise* reasons why a woman develops breast cancer are difficult to specify.
- Genetic + environmental + lifestyle factors
- Hormones seem to have an important role. Research has shown a link between estrogen levels and the risk of developing *HR+ breast cancers.*

Known Breast Ca Risk Factors

- Age (80% of breast cancers occur after menopause)
  1/8 → age < 45
  2/3 → age ≥ 55
- History of Prior breast cancer
  3- 4 X more likely to develop a new cancer (same or other breast)
- History of benign breast conditions with atypia (4X Risk) or without (2X Risk).
- Exposure to excess endogenous or exogenous hormones:
  1. Early menarche
  2. Late menopause
  3. Use of Hormone Replacement Therapy
  4. No pregnancies or age >35 at birth of first child
- Radiation exposure before age 40
  (breast ca after xrt for Hodgkin's lymphoma)
- Dense breast tissue on mammogram
  glands > fat
- lifestyle factors (alcohol [↑ estrogen, DNA damage], lack of exercise [exercise consumes blood sugar and limits IGF, a hormone that can effect breast cell growth], also obesity ➤ (BMI > 25) ➤ extra fat cells = more estrogen in the body.

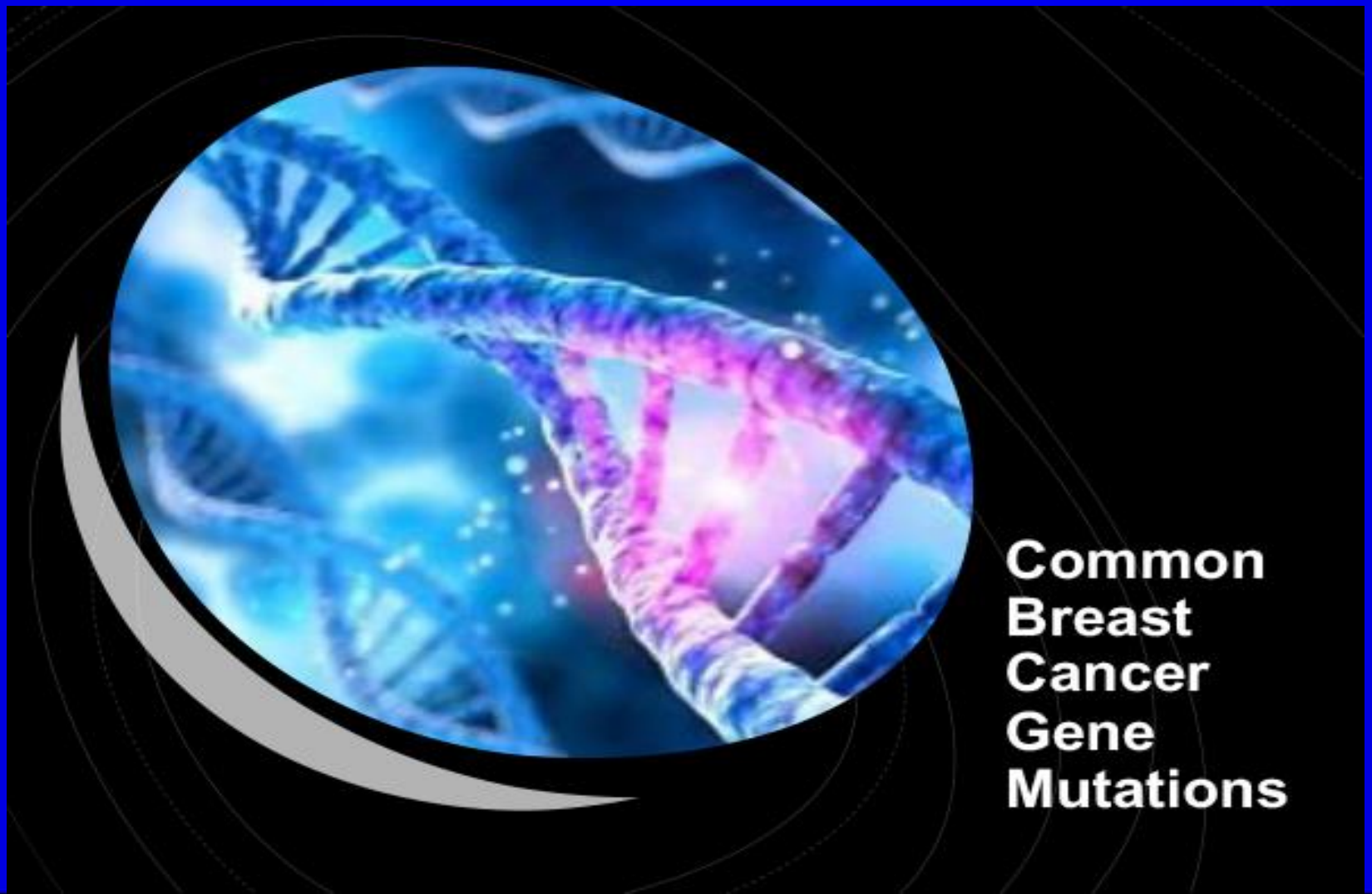
Prevention


An ounce of
PREVENTION
is worth a
POUND OF
CURE
-Benjamin Franklin

Breast Cancer Prevention



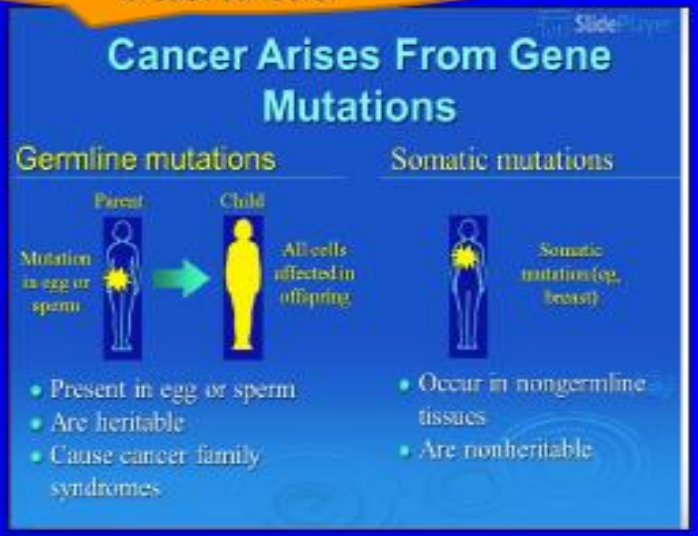
GENES



Mutations

Germline VS Somatic Mutations

Inherited Genetic Mutations Account for ≅ 5-10% of all breast cancers!

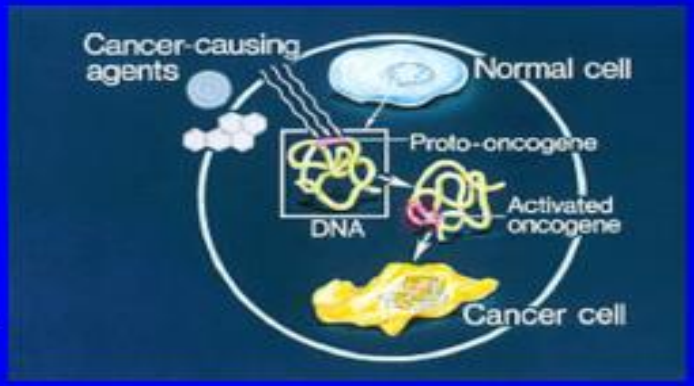


- Many mutations, such as those found in the BRCA1 and BRCA 2 genes, are passed down in an autosomal dominant pattern.
- 1 bad gene from 1 parent = increased risk

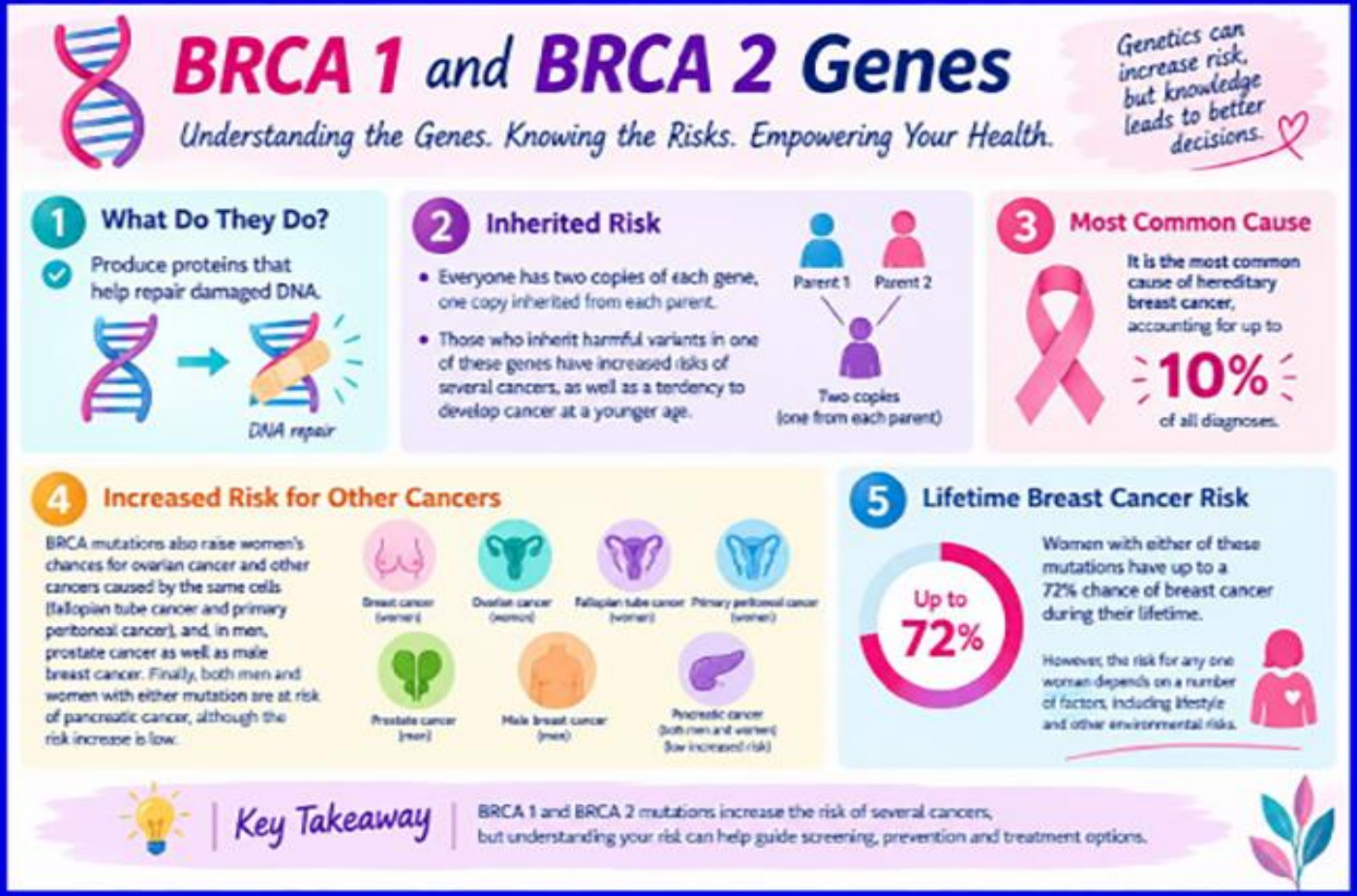
- Somatic Mutations: **Majority of Breast Cancers**

Changes in DNA over lifetime

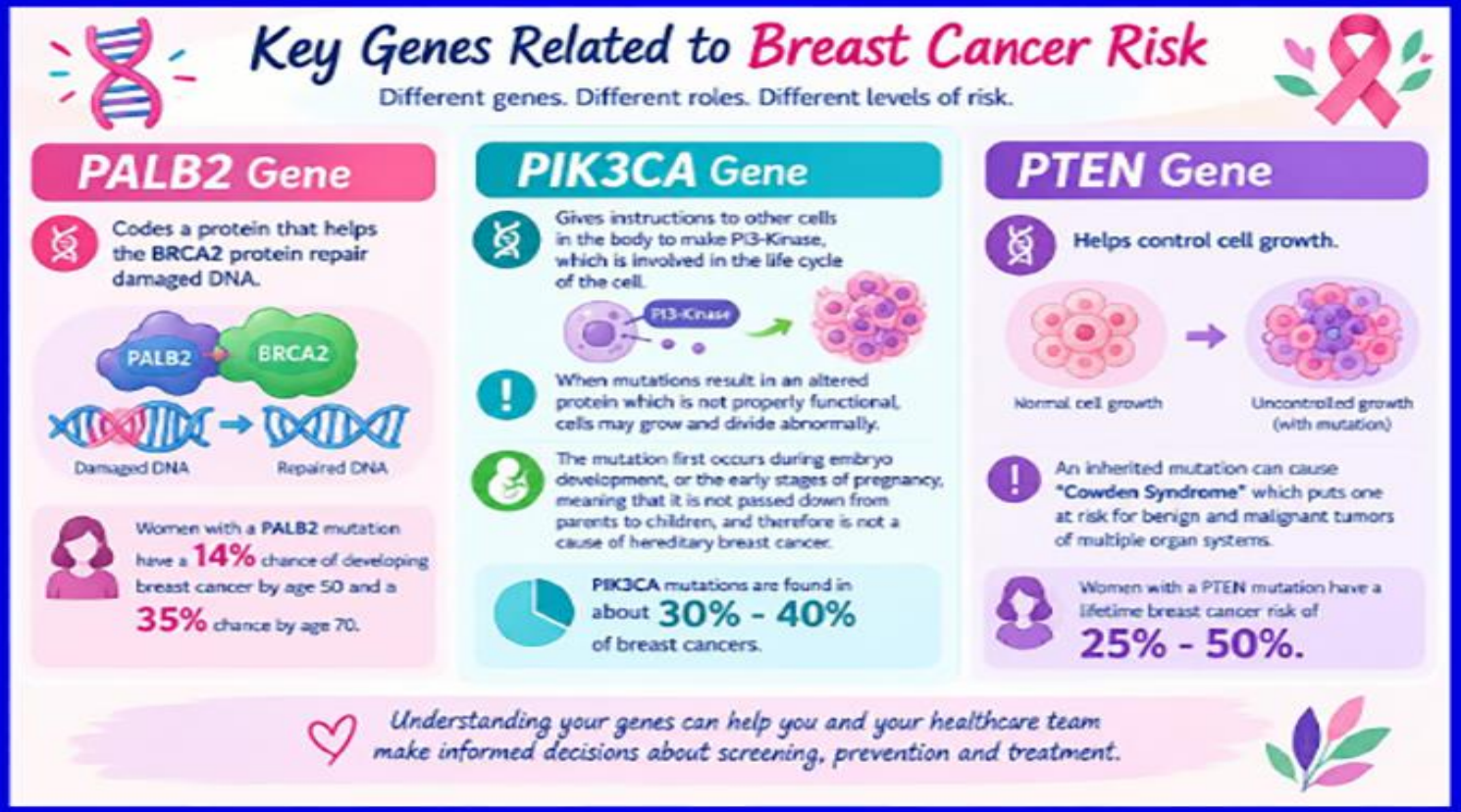
- Environmental Exposures
- Natural aging process



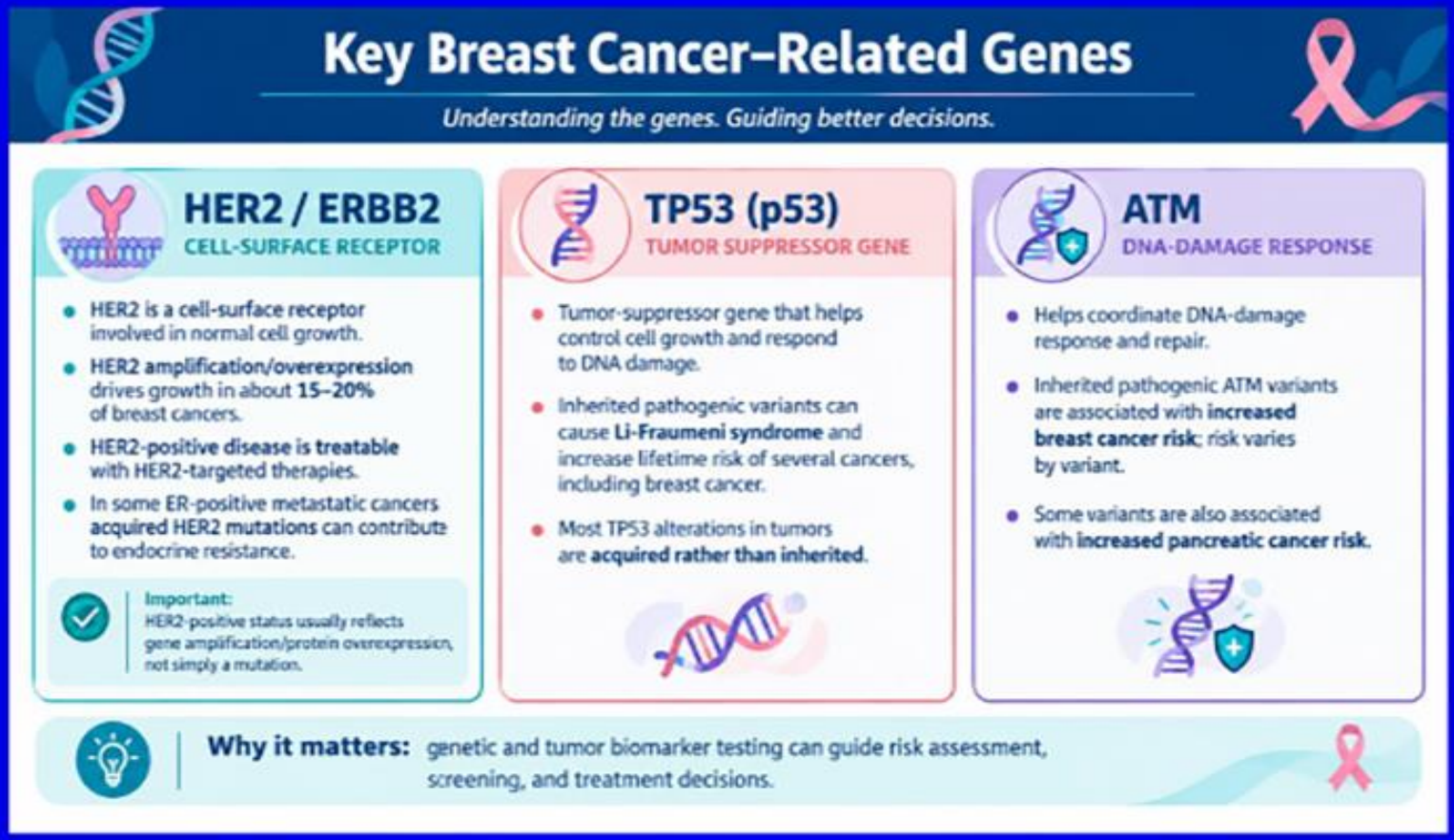
BRCA1 and BRCA2 genes



Key Genes


Key Genes Related to Breast Cancer Risk
Different genes. Different roles. Different levels of risk.
PALB2 Gene
Codes a protein that helps the BRCA2 protein repair damaged DNA.
PALB2
BRCA2
Damaged DNA
Repaired DNA
Women with a PALB2 mutation have a 14% chance of developing breast cancer by age 50 and a 35% chance by age 70.
PIK3CA Gene
Gives instructions to other cells in the body to make PI3-Kinase, which is involved in the life cycle of the cell.
PI3-Kinase
When mutations result in an altered protein which is not properly functional, cells may grow and divide abnormally.
The mutation first occurs during embryo development, or the early stages of pregnancy, meaning that it is not passed down from parents to children, and therefore is not a cause of hereditary breast cancer.
PIK3CA mutations are found in about 30% - 40% of breast cancers.
PTEN Gene
Helps control cell growth.
Normal cell growth
Uncontrolled growth (with mutation)
An inherited mutation can cause "Cowden Syndrome" which puts one at risk for benign and malignant tumors of multiple organ systems.
Women with a PTEN mutation have a lifetime breast cancer risk of 25% - 50%.
Understanding your genes can help you and your healthcare team make informed decisions about screening, prevention and treatment.

Breast cancer related genes



Family history

Myth:

If I don't have a family history of breast cancer, I won't get it

Fact:

Most people diagnosed with breast cancer have no known family history

- Only 5-10% of breast cancers are believed to be hereditary
- The Vast majority are more likely due to environment and lifestyle
- As physicians, we often can't explain why one individual gets breast cancer and another does not.
- We do know that the biggest risk factors are simply being a woman, and aging
- Over time, healthy breast cells can develop mutations on their own, eventually turning into cancer cells.
- Regardless, if you have a strong family history on either of your parents side, this is an important risk factor and should be taken seriously.

Sisters





- The Sister Study is being conducted by the National Institute of Environmental Health Sciences
- From 2003-2009 more than 50,000 women across the U.S. and Puerto Rico, who were between the ages of 35-74 and whose sister had breast cancer, joined this landmark research effort in order to allow the investigation of causes of breast cancer.
- Because of their shared environment, genes, and experiences, studying sisters provides a greater chance of identifying avoidable risk factors that would help to prevent breast cancer.
- The sister study is currently tracking the health of women in the cohort.
  - participants complete health updates annually, as well as detailed questionnaires every 2-3 years.
- Research in the Sister Study focuses on causes of breast cancer, and other health issues in women, as well as on factors that influence quality of life and outcomes after a breast cancer diagnosis.

Recent Updates

Recent Major Updates
NIEHS Sister Study – Helping to identify and prevent environmental contributors to breast cancer

Research Focus Area	Core Study Finding / Dynamic Update	Target Compounds & Risk Factors
Exposomics & Chemical Tracking	Evaluating how modern, complex chemical mixtures impact risk through advanced blood analysis.	PFAS, phthalates, plasticizers
Sedentary Behavior & Menopause	Increased sedentary time elevates risk for postmenopausal women, while showing an inverse relationship for premenopausal women.	Prolonged sitting, physical inactivity
Personal Care & Lifestyle Factors	Clear evidence linking routine external environmental and lifestyle variables to significantly elevated breast cancer risk.	Chemical hair straighteners, permanent hair dye, air pollution, obesity, nighttime light, early-life stress
Vitamin D & Health Disparities	Sufficient Vitamin D levels lower breast cancer risk (especially impactful for Black and Hispanic participants). Systemic discrimination correlates to comorbid type 2 diabetes.	Vitamin D deficiency, systemic/structural discrimination

Behaviors

Myth:

If I maintain a healthy weight, exercise regularly, eat healthy, and limit alcohol, I won't have to worry about breast cancer.

Fact:

Although these behaviors can help lower breast cancer risk, they can't eliminate it.

- "I eat healthy, I exercise, I am not overweight, I limit my alcohol intake, so doctor, how did I get breast cancer?"
- Please understand, and help your friends and family to understand – that even though you think you are doing everything right, no one is 100% safe.

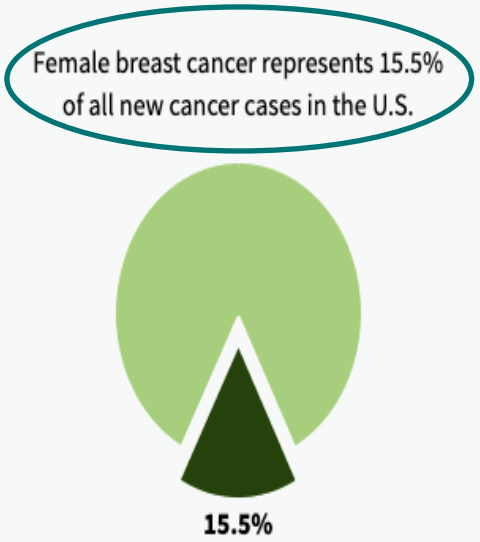
Breast Cancer Statistics

Cancer statistics

How Common Is This Cancer?

Compared to other cancers, female breast cancer is fairly common.

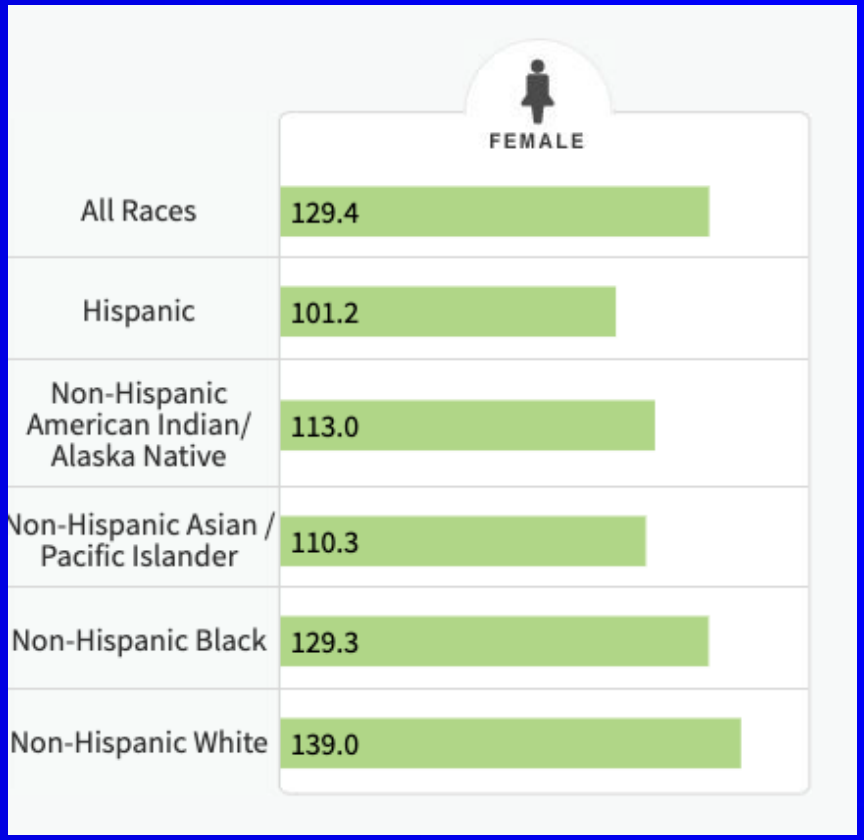
	Common Types of Cancer	Estimated New Cases 2024	Estimated Deaths 2024
1.	Breast Cancer (Female)	310,720	42,250
2.	Prostate Cancer	299,010	35,250
3.	Lung and Bronchus Cancer	234,580	125,070
4.	Colorectal Cancer	152,810	53,010
5.	Melanoma of the Skin	100,640	8,290
6.	Bladder Cancer	83,190	16,840
7.	Kidney and Renal Pelvis Cancer	81,610	14,390
8.	Non-Hodgkin Lymphoma	80,620	20,140
9.	Uterine Cancer	67,880	13,250
10.	Pancreatic Cancer	66,440	51,750



SEER: Surveillance, Epidemiology, and End Results Program, NCI

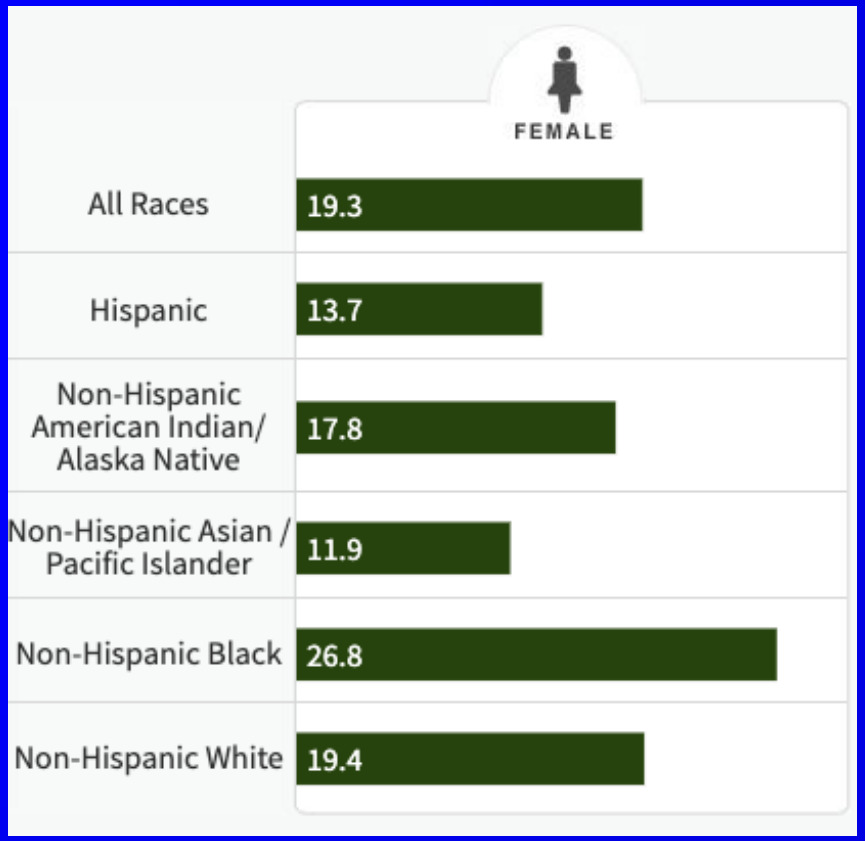
Rates of Incidence and Death By: Race and Ethnicity

Who Gets This Cancer



Rate of New Cases per 100,000 Persons

Who Dies From This Cancer



Death Rate per 100,000 Cases

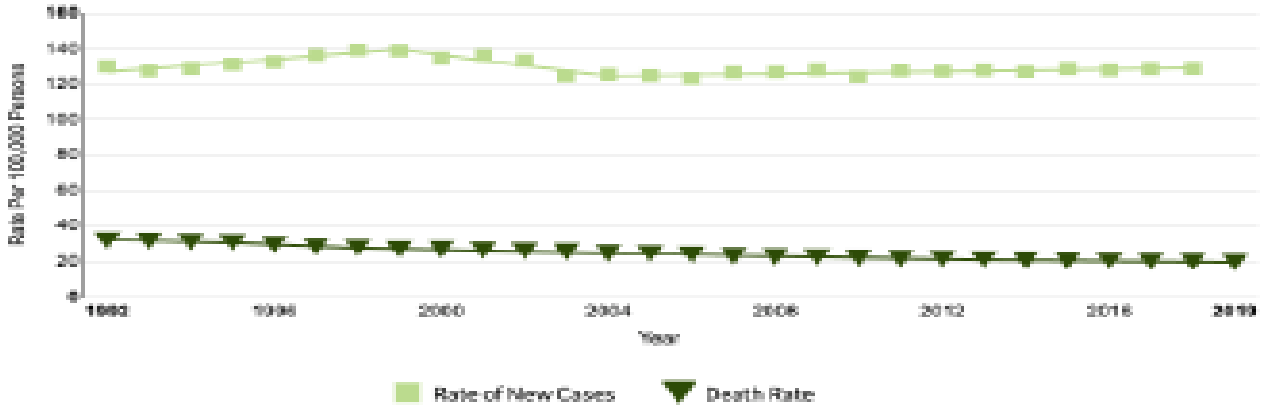
Breast cancer statistics

Female Breast Cancer Stat Facts

At a Glance

Estimated New Cases in 2021	281,550
% of All New Cancer Cases	14.8%
Estimated Deaths in 2021	43,600
% of All Cancer Deaths	7.2%

5-Year Relative Survival
90.3%
2011-2017



New cases come from SEER 13. Deaths come from U.S. Mortality.
All Races, Females. Rates are Age-Adjusted.

- Estimates of new cases and deaths for 2021 are projections made by the American Cancer Society, based on earlier reported data.

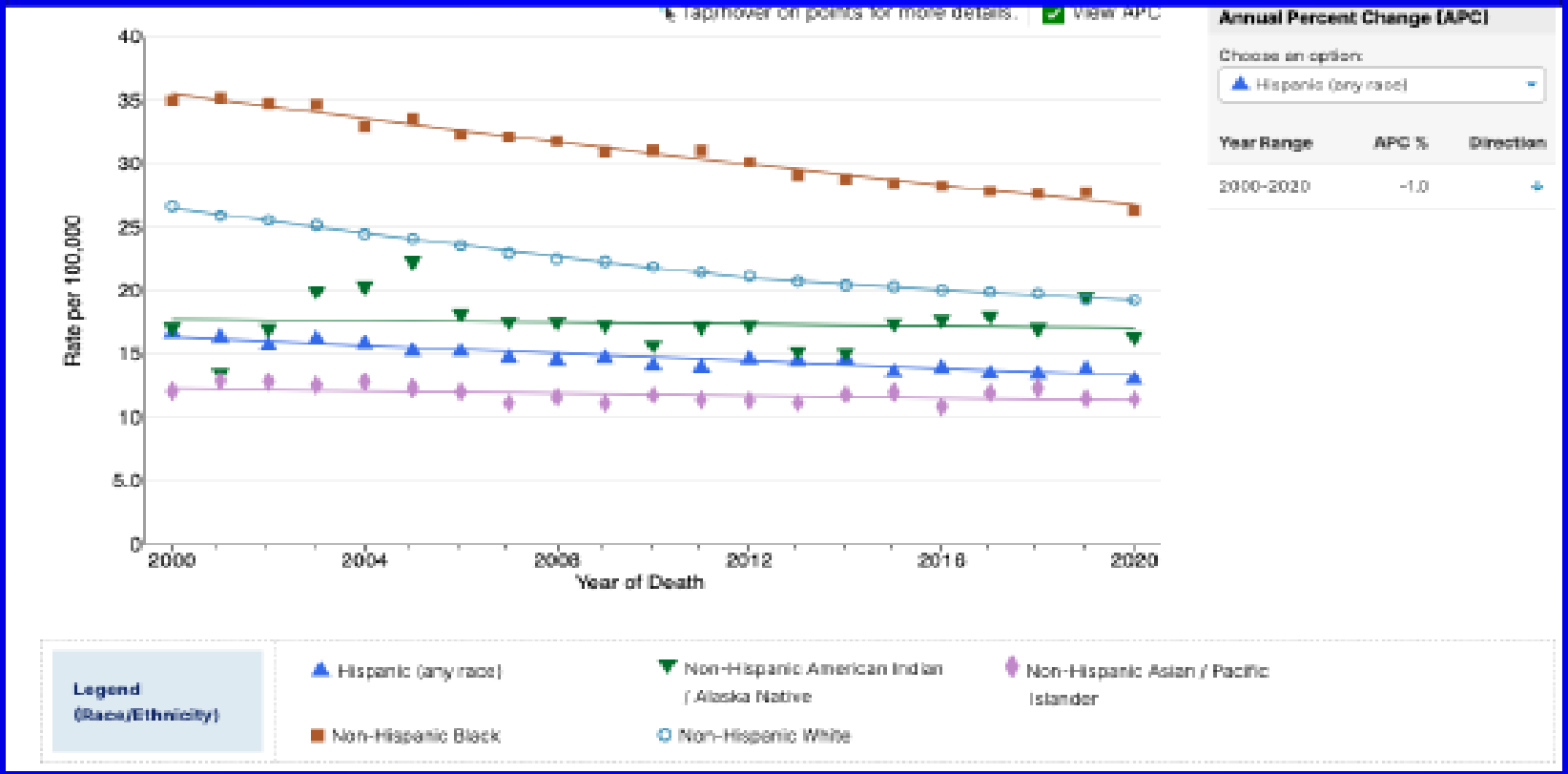
MEN:

- Lifetime Risk: 1 in 833
- About 2,650 new cases of invasive disease are projected to be diagnosed in 2021

Age-adjusted mortality

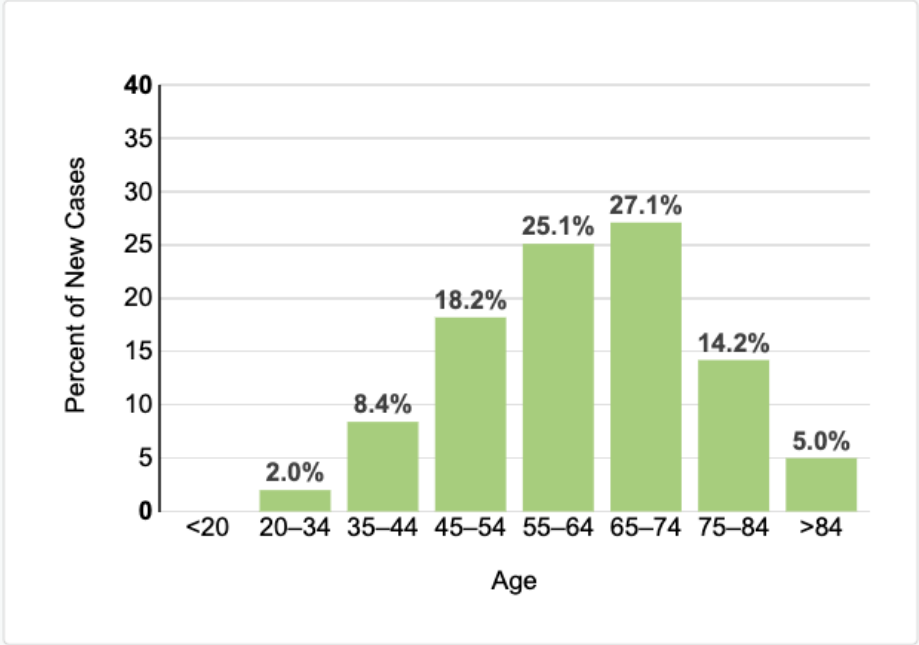
Age –Adjusted U.S. Breast Cancer Mortality Rates

*By Race/Ethnicity, Female, All Ages



Percent of New Cases by Age Group

Percent of New Cases by Age Group: Female Breast Cancer



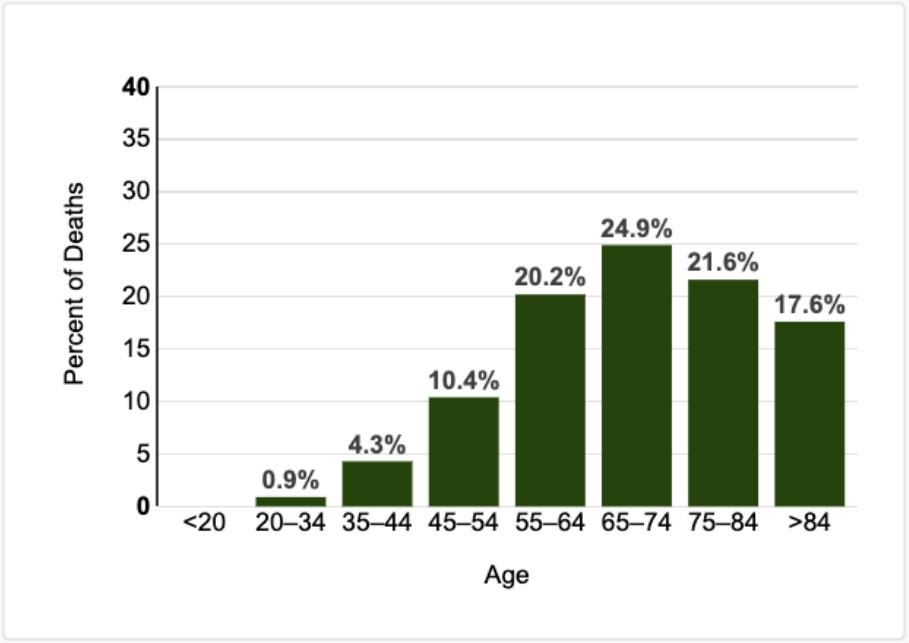
Female breast cancer is most frequently diagnosed among women aged 65–74.

Median Age At Diagnosis
63

SEER 22 2017–2021, All Races, Females

Percent of Deaths by Age Group

Percent of Deaths by Age Group: Female Breast Cancer



The percent of female breast cancer deaths is highest among women aged 65–74.

Median Age At Death
70

U.S. 2018–2022, All Races, Females

Early Detection



Breast lump

Myth:

Breast cancer always causes a lump you can feel

Fact:

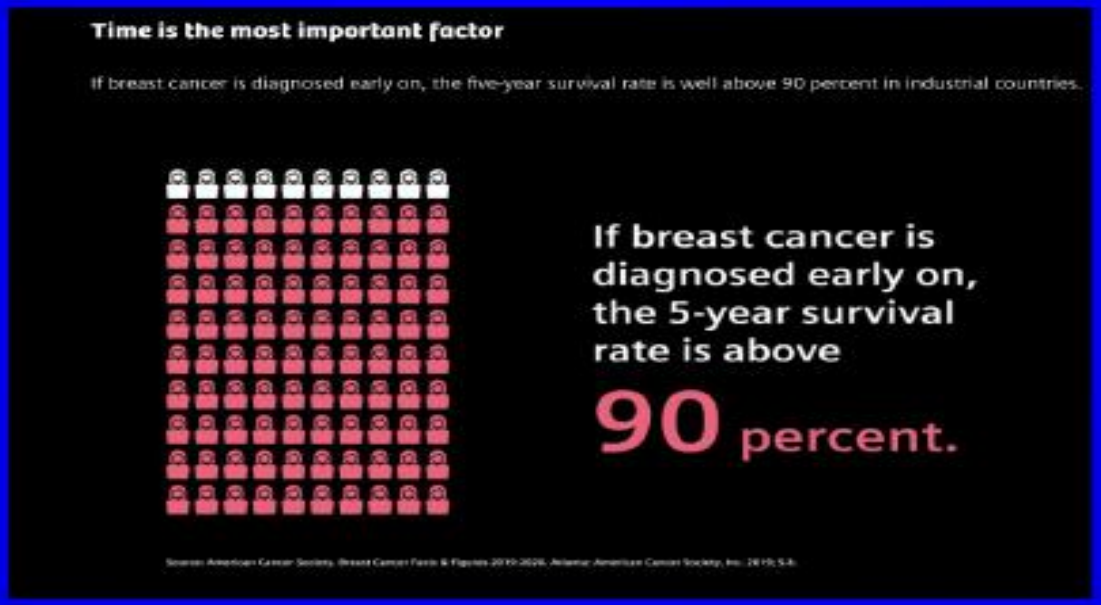
Breast Cancer might not cause a lump, especially when it first develops.

- People are sometimes under the impression that breast cancer always causes a lump that can be felt during a self – exam.
- They might use this as a reason to skip mammograms, thinking that they would be able to feel any change that might indicate a problem.
- If a lump is felt, it is possible that the cancer might have already moved beyond the breast into the lymph nodes.

Early detection







Mammograms

- Mammograms can be used as screening tools to detect early breast cancer in women experiencing no symptoms
- Mammograms can also be used to detect and diagnose breast disease in women experiencing symptoms such as a lump, pain, or nipple discharge.
- Reduces mortality by:
  26% aged 50-74
  17% aged 40-49

*American Cancer Society







3 types of mammograms

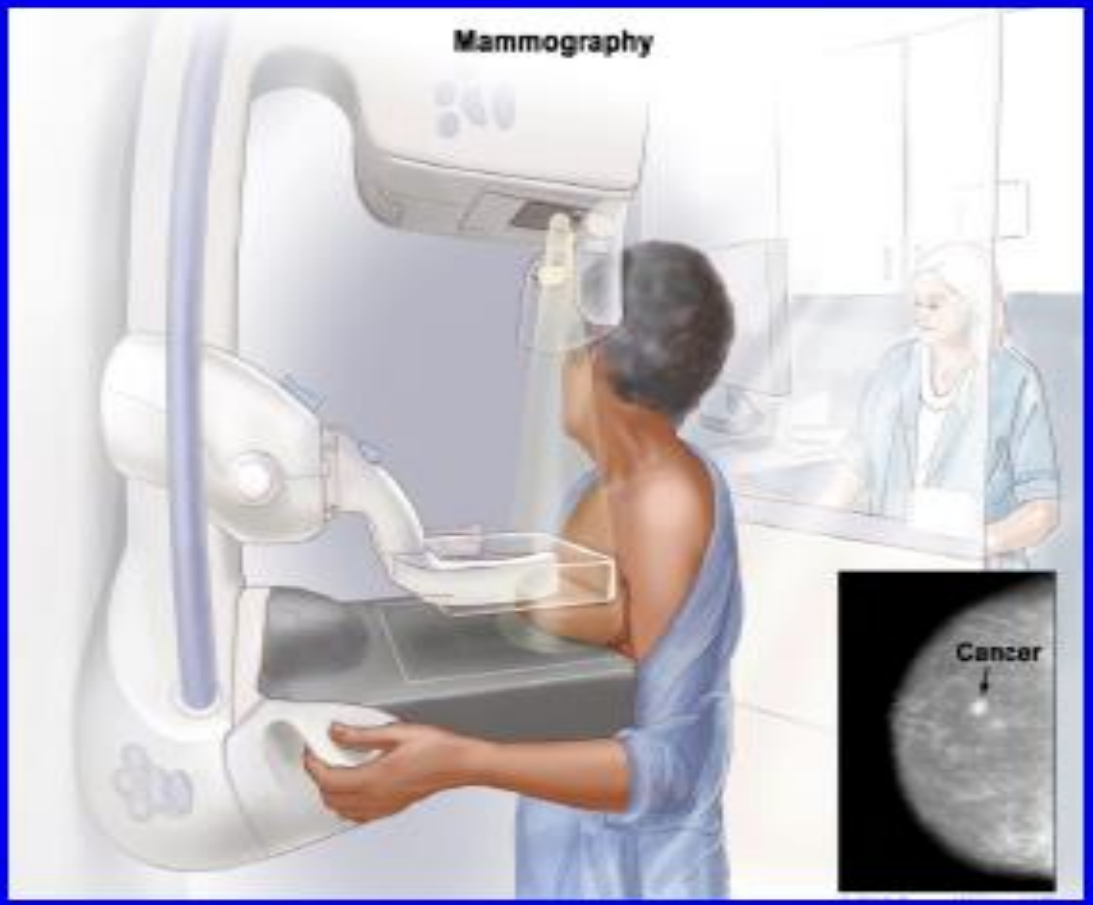
3 Types of Mammograms

1. Film Mammography
   - X-Ray Picture of the breast
   - Antiquated Method!

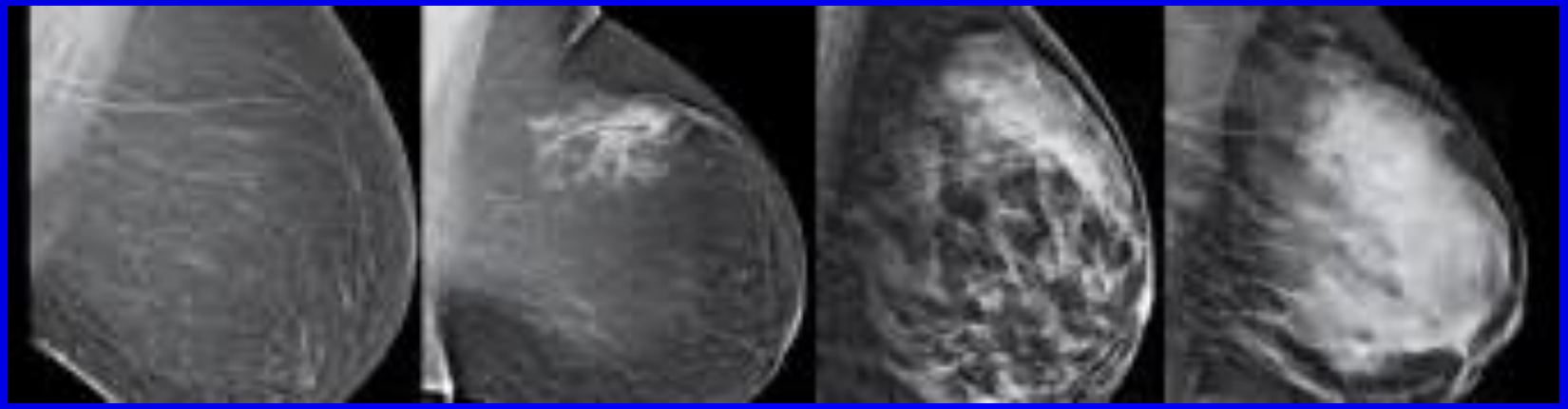
2. Digital Mammography
   - Computer Picture of the breast

3. Digital Breast Tomosynthesis (DBT)
   - uses x-rays to take a series of pictures of the breast from many different angles. Then, a computer is used to make 3-D pictures of the breast

Approved by the FDA in 2018 & now in use in 3 out of 4 facilities. One study found that DBT reduced false positive results. Studies are on-going comparing digital mammography to DBT.



What Does it Mean to Have Dense Breast?



- Dense Breast Tissue is breast tissue that has a higher proportion of glandular and fibrous connective tissue than fatty tissue.
- On mammogram, dense tissue appears white, while fatty tissue appears black.
- Dense breasts are associated with an increased risk of breast cancer ONLY because it can make it harder for doctors to see abnormal growths on mammograms.

Having Dense Breast Tissue Does NOT mean you WILL get breast cancer!!!

American Cancer Society Guidelines for the Early Detection of Breast Cancer

American Cancer Society Guidelines for the Early Detection of Breast Cancer

Average Risk

- **Age 40-44**: women have the **choice** to begin annual mammograms. Risks and benefits should be considered.
- **Age 45-54**: **annual** mammograms are recommended.
- **Age 55 and older**: switch to **biannual** mammograms, or have the choice to continue an annual schedule based on risks/benefits.

Screening should continue as long as a woman is in good health, and life expectancy is 10 years or more.

High Risk

Annual MRI + Mammogram ***(as long as a woman is in good health and life expectancy is >/= 10 years)***

- Lifetime risk of breast cancer:
  >/= 20-25%
  - using risk-assessment tools (based mainly on family history)
- Known BRCA 1 or BRCA 2 Gene Mutation.
- First degree relative with BRCA 1 or BRCA 2 gene mutation
- Chest Radiation ages 10-30

MRI

American Cancer Society Guidelines:
Use of MRI For Early Detection of Breast Cancer

- MRI uses a magnet, radio waves, and a computer to make a series of detailed pictures, and does not utilize radiation.
- While MRI is more sensitive than mammogram, it also has a higher false positive rate. This may lead to unnecessary biopsies and other procedures.
- The American Cancer Society recommends *against* use of MRI for women whose lifetime risk of breast cancer is < 15%.
- For women who have a moderately increased lifetime risk of breast cancer (15-20%) there is not enough evidence to make a recommendation for or against use of annual MRI.
- If MRI is used, it should be in addition to, and not in place of a screening mammogram, given that it can miss cancers that a mammogram would find.

American Cancer Society Guidelines for the Early Detection of Breast Cancer

Clinical Breast Exam & Breast Self Exam:

- There is no solid clinical trial evidence that a physical breast exam done either by a health care professional or by the women themselves, provides any clear benefit in early detection or reducing breast cancer mortality.
- Due to this lack of evidence, regular clinical breast exams and breast self exams are not part of the ACS guidelines.
- However, all women should be familiar with how their breast look and feel, and report any changes to their physician ASAP.

Self Breast Exam

Self Breast Exam (SBE)

- Size
- Shape
- Color
- Dimpling
- Puckering
- Retraction
- Thickening
- Inverted nipple
- Nipple discharge

Step 1



Shoulders straight, arms on hips

Step 2



Arms over head

Self Breast Exam

Self Breast Exam

Step 3



Examine lying down

Firm, smooth touch

Fingers flat & together

Circular Motion

Follow a pattern

Cover whole breast

Step 4



Examine upright

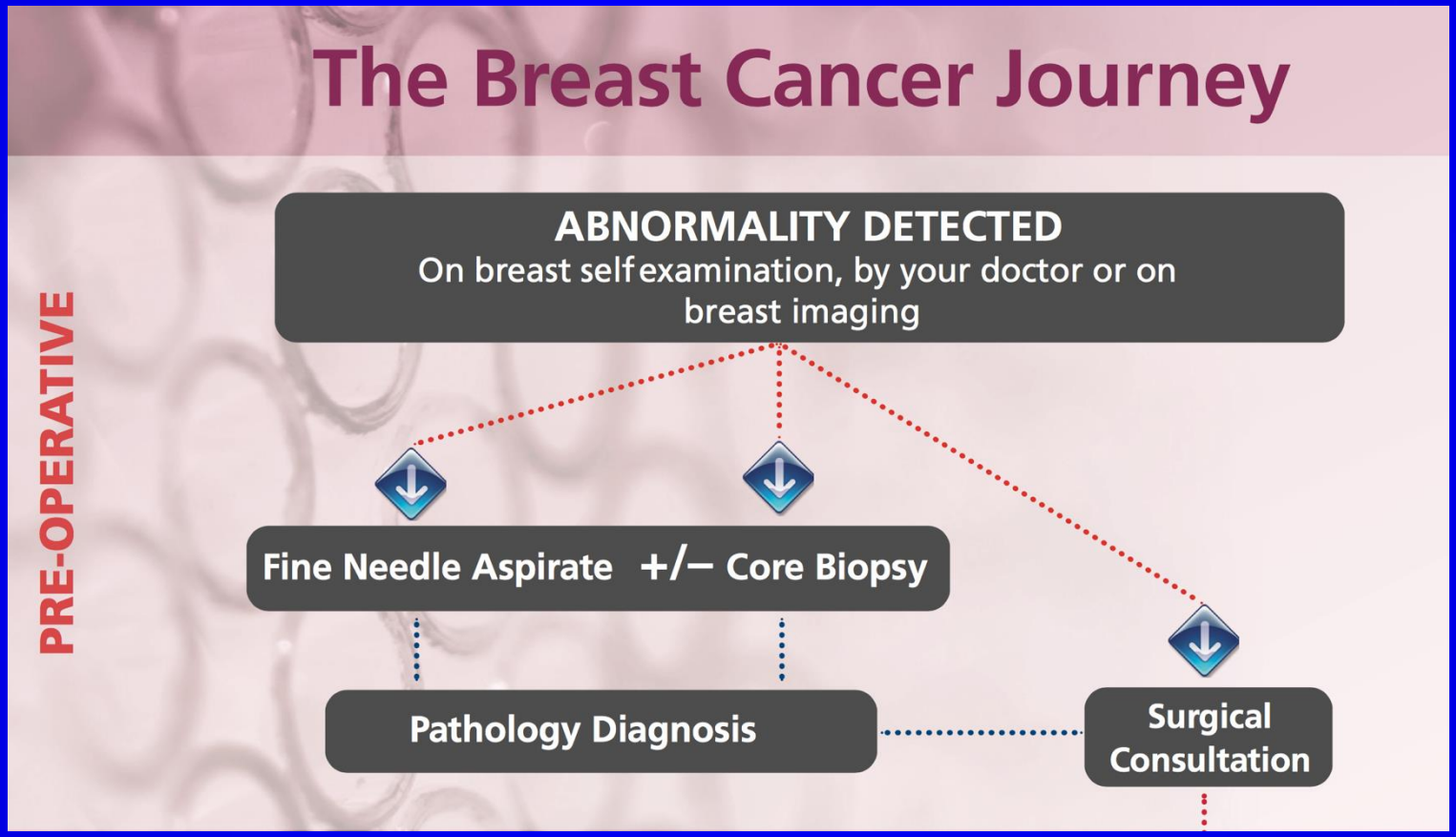
Patient journey



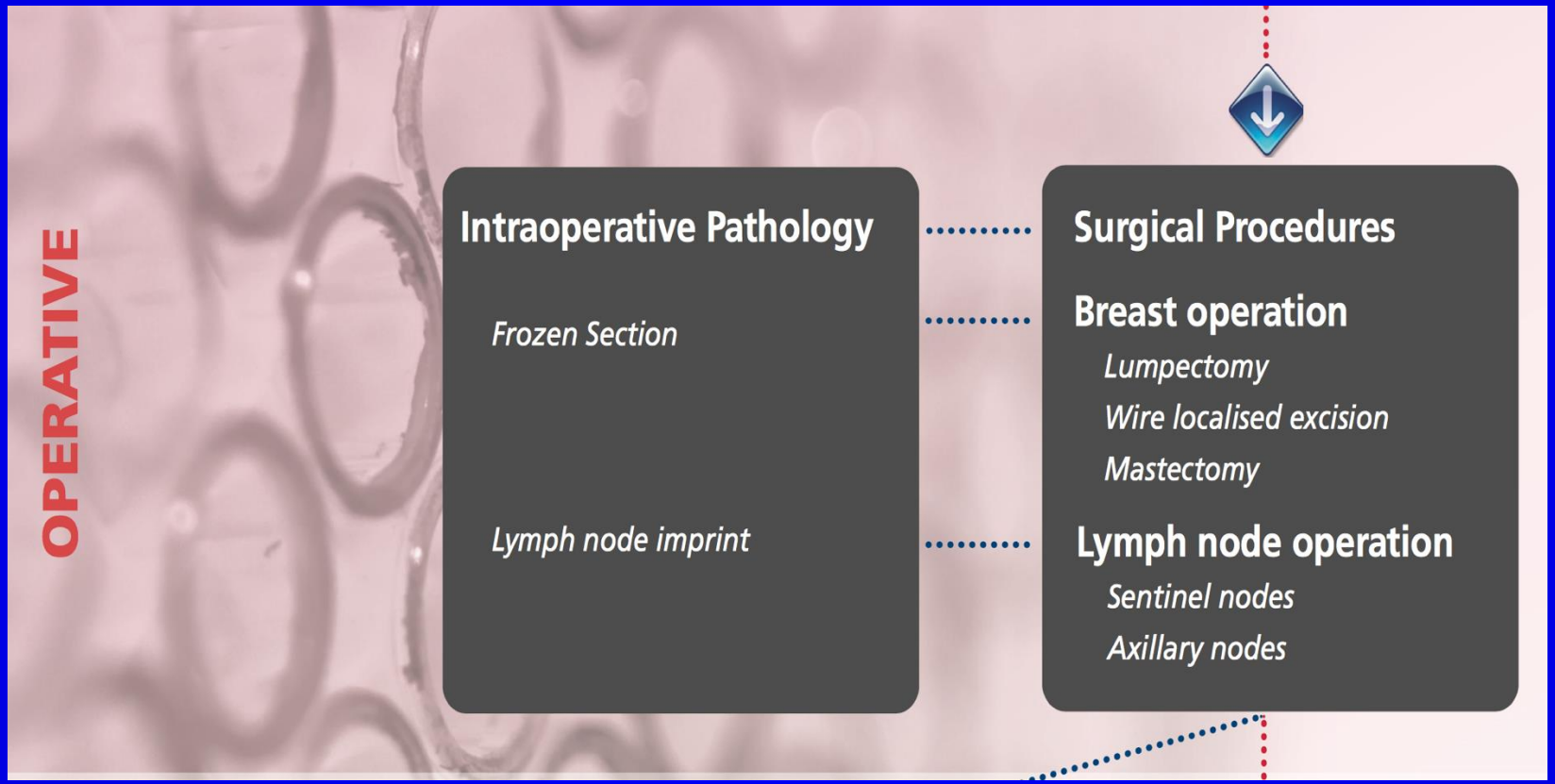




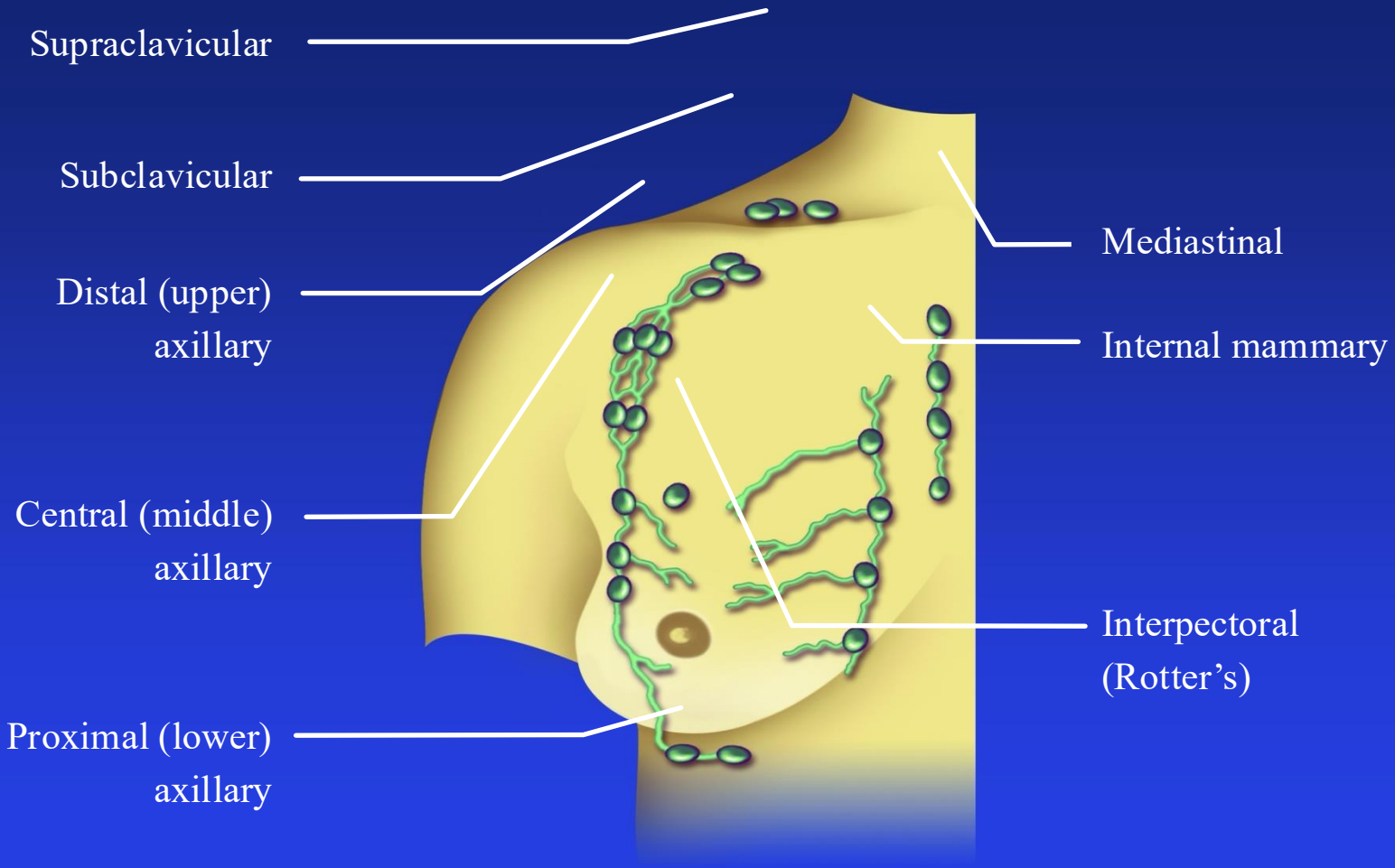
Pre-operative



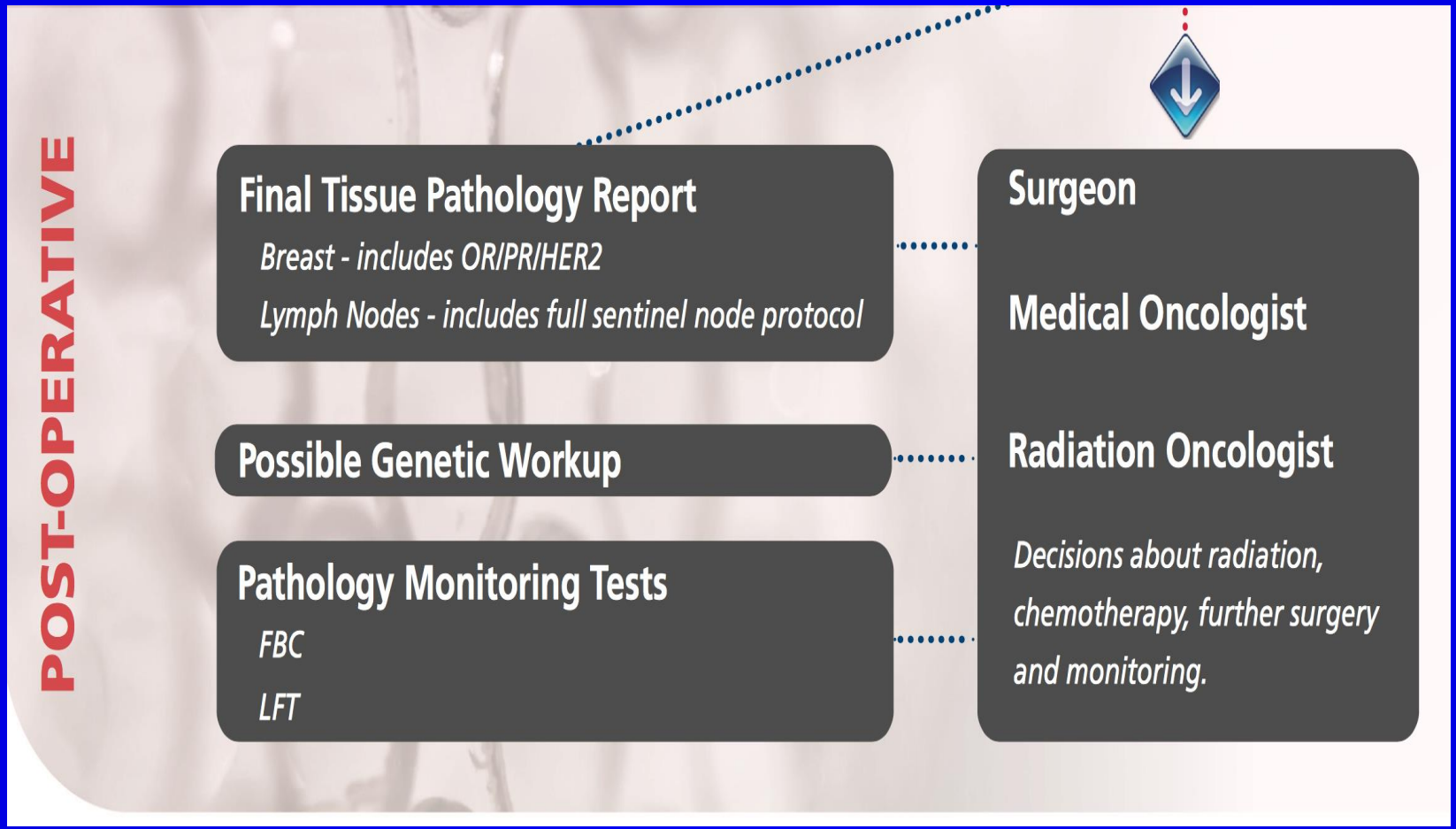
Operative


OPERATIVE
Intraoperative Pathology
Frozen Section
Lymph node imprint
Surgical Procedures
Breast operation
Lumpectomy
Wire localised excision
Mastectomy
Lymph node operation
Sentinel nodes
Axillary nodes

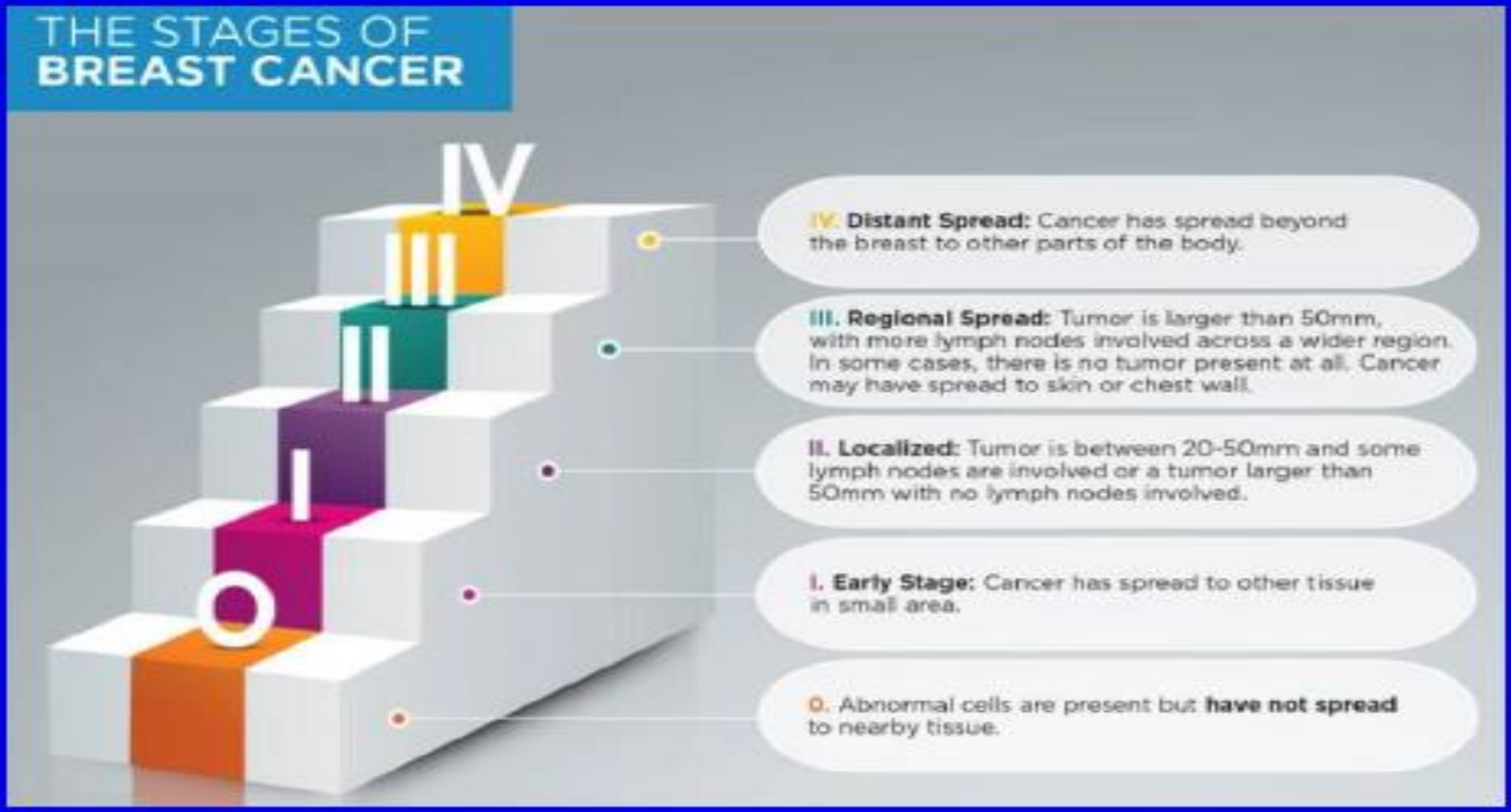
Structure of the Breast : Lymph Nodes



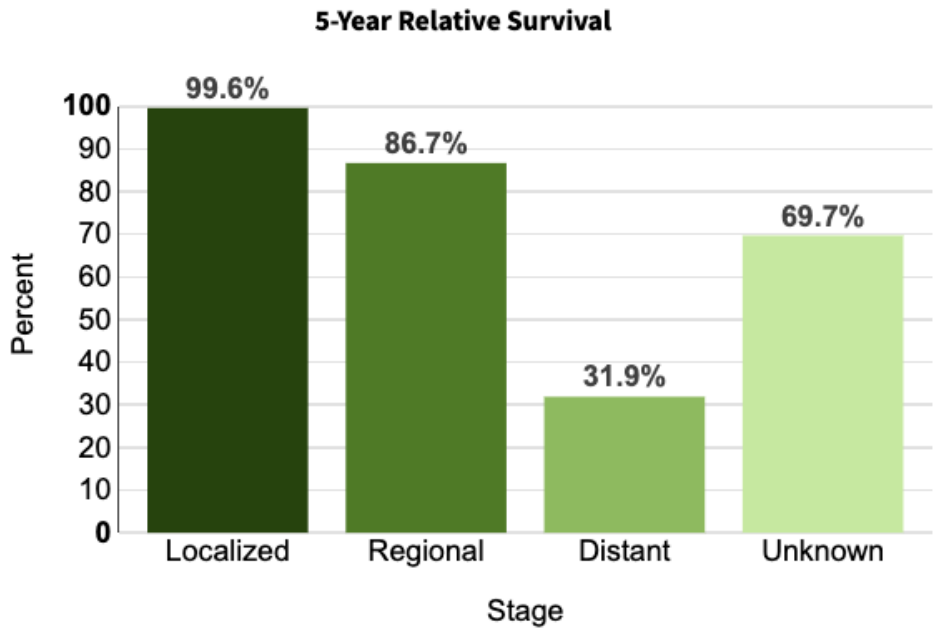
Post-operative



Breast cancer stages



5-Year Relative survival



SEER 22 (Excluding IL/MA) 2014–2020, All Races, Females by SEER Combined Summary Stage

Inflammatory Breast Cancer

Definition

- A rare form of breast cancer
- Incidence in US ~ 1-5%
- Difficult to track because of variation in diagnostic criteria.
- Malignant cells infiltrate and clog the dermal lymphatics; However, this is NOT a diagnostic criteria for IBC
- The diagnosis is mainly clinical along with confirmed invasive cancer.

Clinical Presentation

- Confirmed biopsy of invasive breast cancer .
- Rapid onset 3-6 months
- Erythema over ≥ 1/3 of the breast
- Edema (peau d'orange)
- Breast enlargement, often w/o a mass.

IBC



IBC

Clinical Presentations of IBC









Prognostic and Predictive Factors influencing Treatment Decisions

Treatment

- Breast Cancer is commonly treated with various combinations of:

  - surgery
  - radiation therapy
  - chemotherapy
  - hormone therapy
  - targeted therapies

Prognosis and Selection of Therapy Influenced By:

- Menopausal status
- Stage of disease
- Grade of the tumor
- ER/PR status
- HER2/neu amplification
- Histologic type
  favorable histologies:
  - mucinous
  - medullary
  - tubular
- Patient's age and general health
- Presence of known mutations

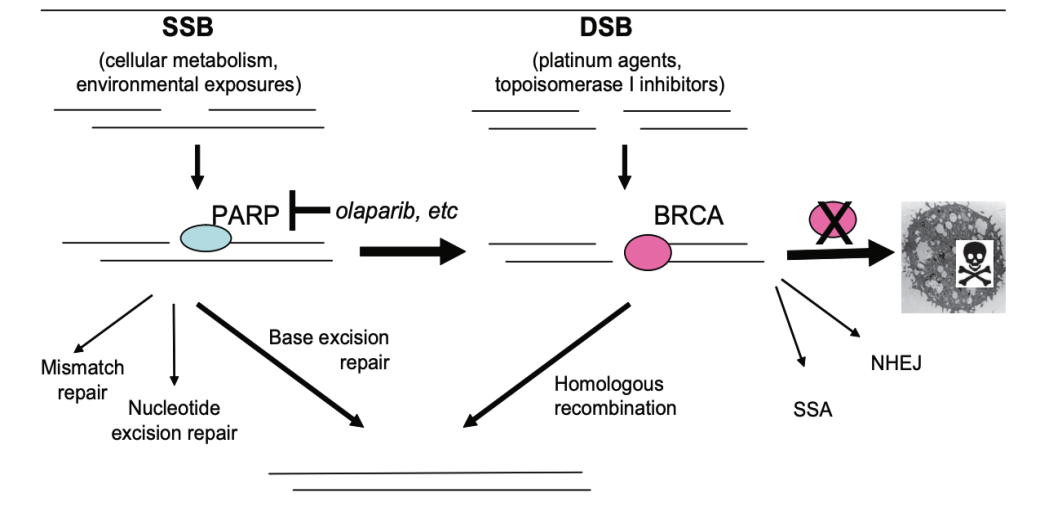
Molecular Profiling



What are the Clinical Implications of Molecular Diagnostics in Breast Cancer?

- Treatment is becoming more personalized for patients, with tumor genomic profiling that could lead to optimal treatment.
- Clinical Next Generation Sequencing (NGS or Tumor Profiling) is increasingly being used to identify potentially actionable mutations in tumor tissue.
- Current research indicates assigning treatment based on specific mutations in breast cancer, particularly BRCA mutations, can significantly improve overall survival in both the early stage and metastatic setting, mainly through the use of targeted therapies like PARP inhibitors, which have shown effectiveness in patients with these mutations; however, the exact benefit depends on the specific mutation as well as the patient's individual tumor profile.
- With regard to other multiple mutations that can be found in tumors: it is often not clear which one to target to achieve maximal benefit. This is an avenue of ongoing investigation.

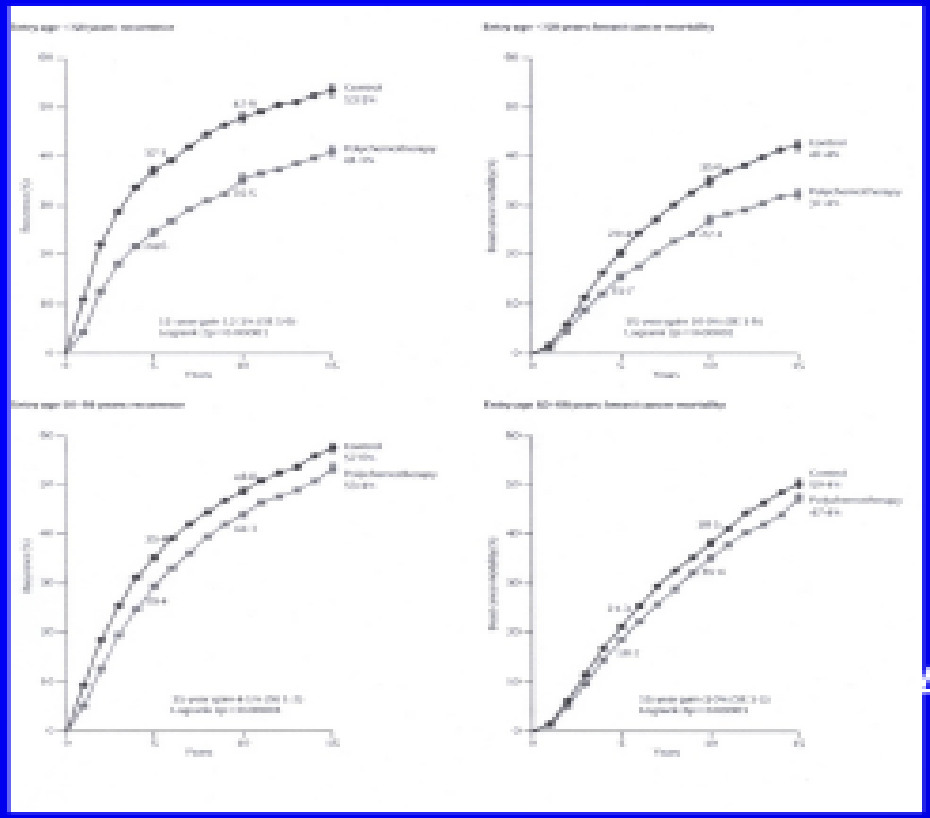
Mechanisms of Sensitivity to PARP Inhibition in BRCA-deficient cells



Risk reductions

Absolute Risk Reductions of Relapse and Mortality with Polychemotherapy

Though both age groups do benefit from polychemo the greatest reduction in recurrence and mortality is in those <50.



Age<50

Age 50-69

Recurrence

Mortality

EBCTCG, Lancet 2005

Chemotherapy

Examples of chemotherapy Agents and Regimens used in Breast Cancer

Chemotherapy class	Examples of drugs	Example regimen or clinical use
Anthracyclines	Doxorubicin, epirubicin	Early-stage and advanced breast cancer
Taxanes	Paclitaxel, docetaxel	Early-stage and metastatic breast cancer
Alkylating agents	Cyclophosphamide	Often combined with other drugs; e.g., AC
Platinum agents	Carboplatin, cisplatin	Selected cases, including triple-negative breast cancer
Antimetabolites	Capecitabine, 5-FU, gemcitabine	Selected early-stage and advanced disease settings
Other chemotherapy agents	Eribulin, vinorelbine	Primarily advanced or metastatic disease

Common chemotherapy regimens to recognize

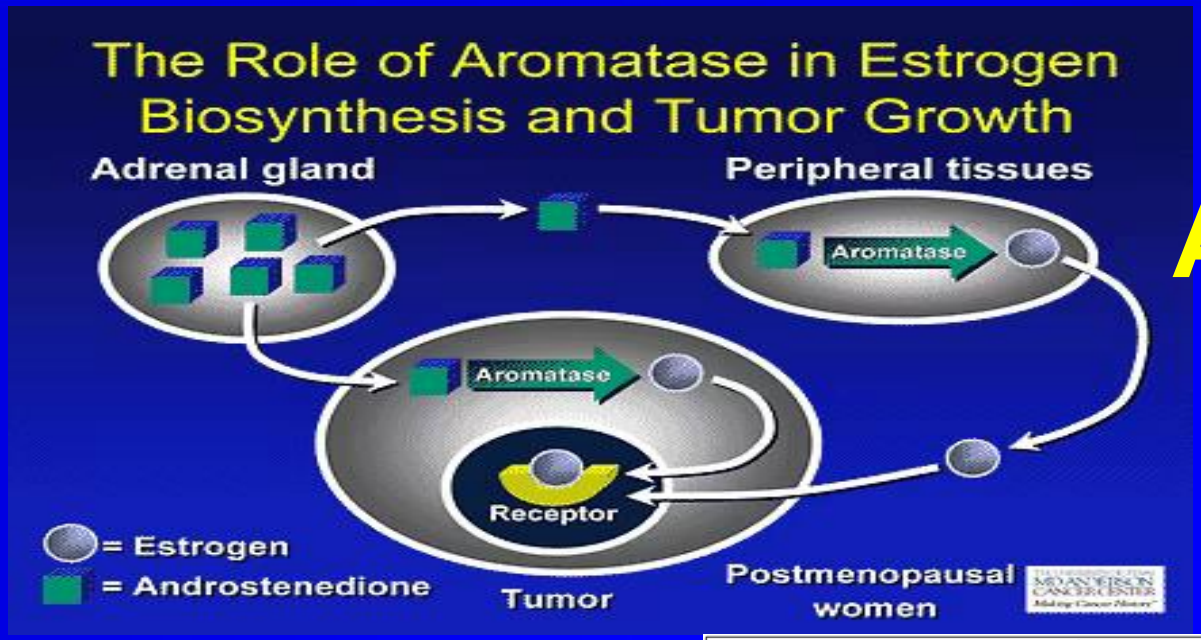
- **AC:** Doxorubicin + cyclophosphamide
- **AC-T:** AC followed by a taxane, such as paclitaxel or docetaxel
- **TC:** Docetaxel + cyclophosphamide
- **CMF:** Cyclophosphamide + methotrexate + 5-fluorouracil

HR+ breast cancer

At this point, it is worth mentioning:

In HR+ breast cancer (which is the most common subtype), the use of genomic assays to predict recurrence scores has markedly reduced the use of adjuvant chemotherapy, especially in patients older than 50 years of age.

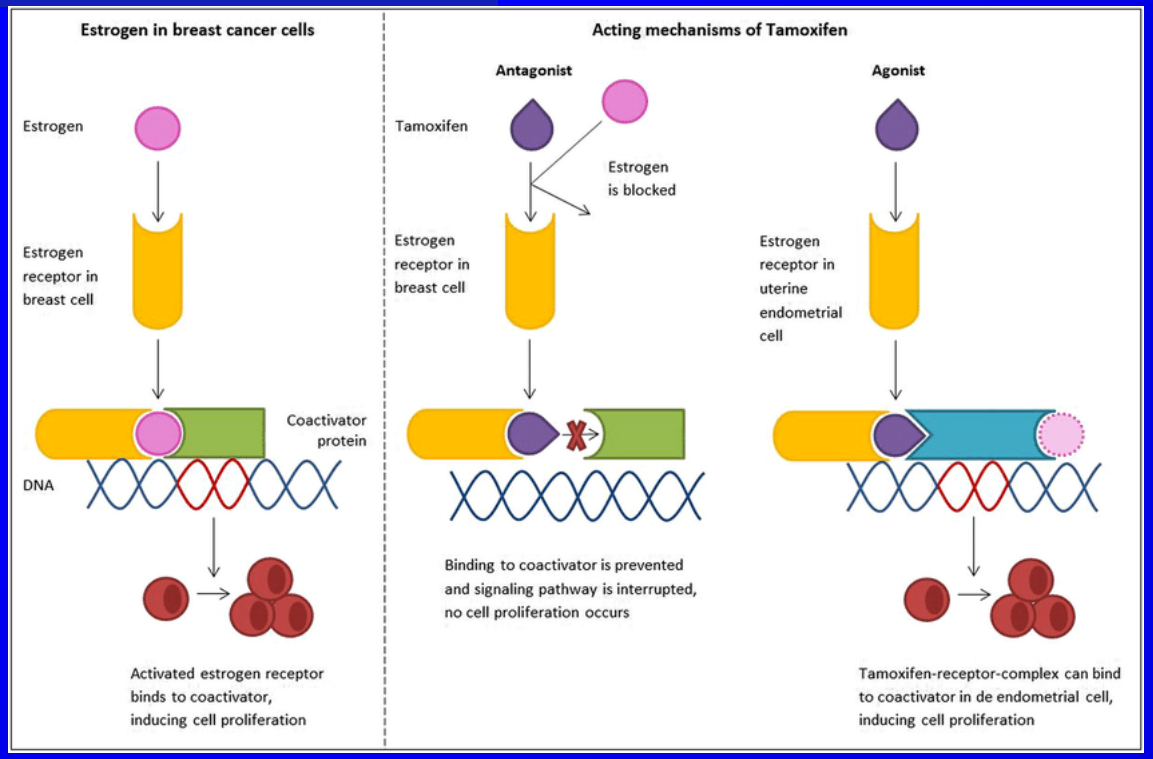
For patients with a lower recurrence score (0-25 for Oncotype DX) we have the option of treating with hormonal therapy alone, avoiding toxicity of chemo



Aromatase

Aromatase Inhibitors

Tamoxifen



Example of the many hormonal therapies approved for early stage and locally advanced breast cancer:

Drug	Brand Name	Menopausal Status	IM Pill	Class or Mechanism
Tamoxifen	Nolvadex	Pre & Post	Pill	SERM: antagonist (breast) partial agonist (endometrium)
Anastrozole Letrozole	Arimidex Femara	Post	Pill Pill	Aromatase Inhibitor (AI) Blocks Aromatase, enzyme that converts other hormones to estrogen
Exemestane	Aromasin	Post	Pill	AI
Fulvestrant	Faslodex	Post	IM	Pure Anti-estrogen
Goserelin	Zoladex	Pre	IM	Ovarian Suppression
Leuprolide	Lupron	Pre	IM	Ovarian Suppression

EBCTCG: Benefit of Tamoxifen as Adjuvant *Treatment*

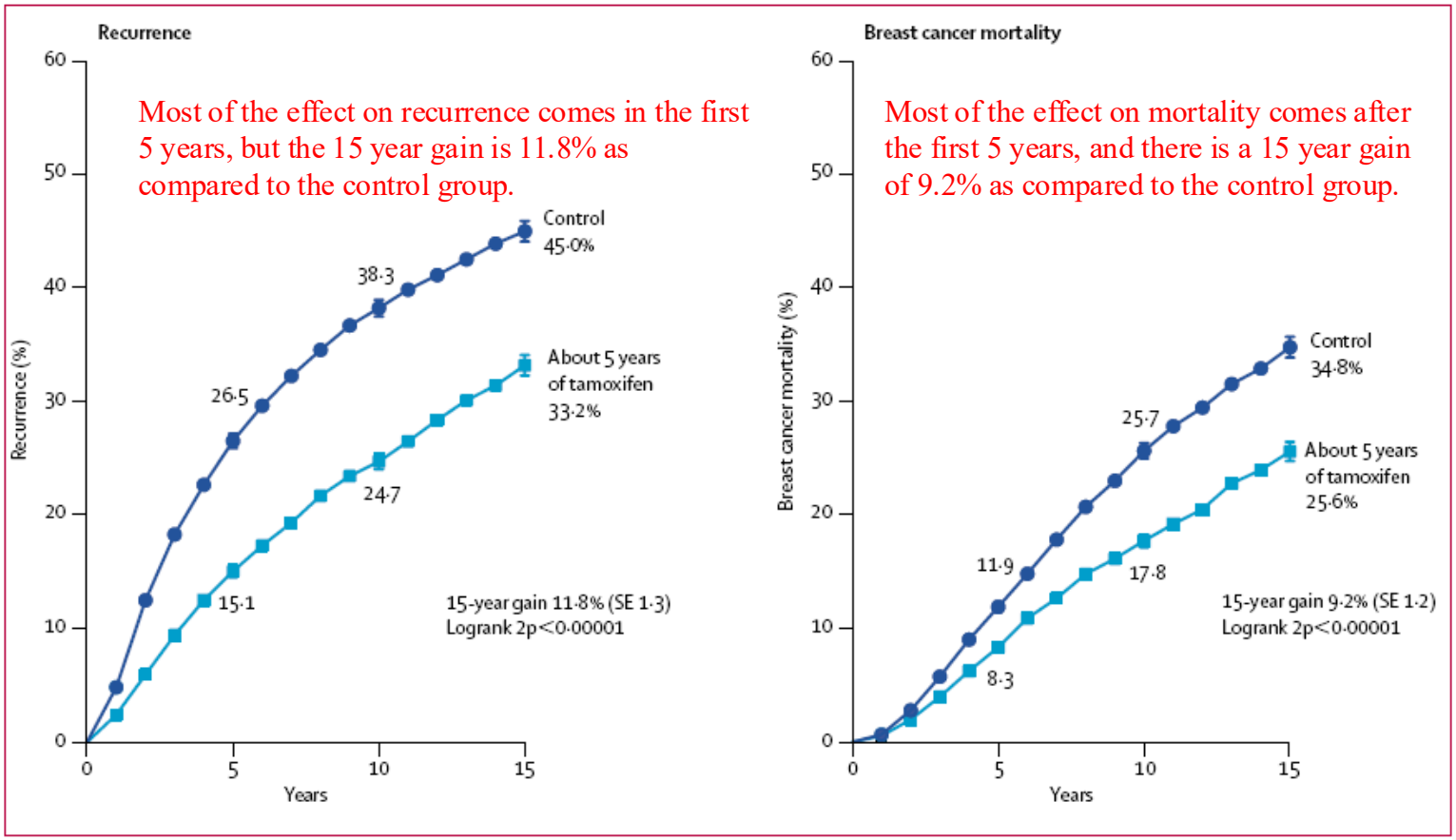
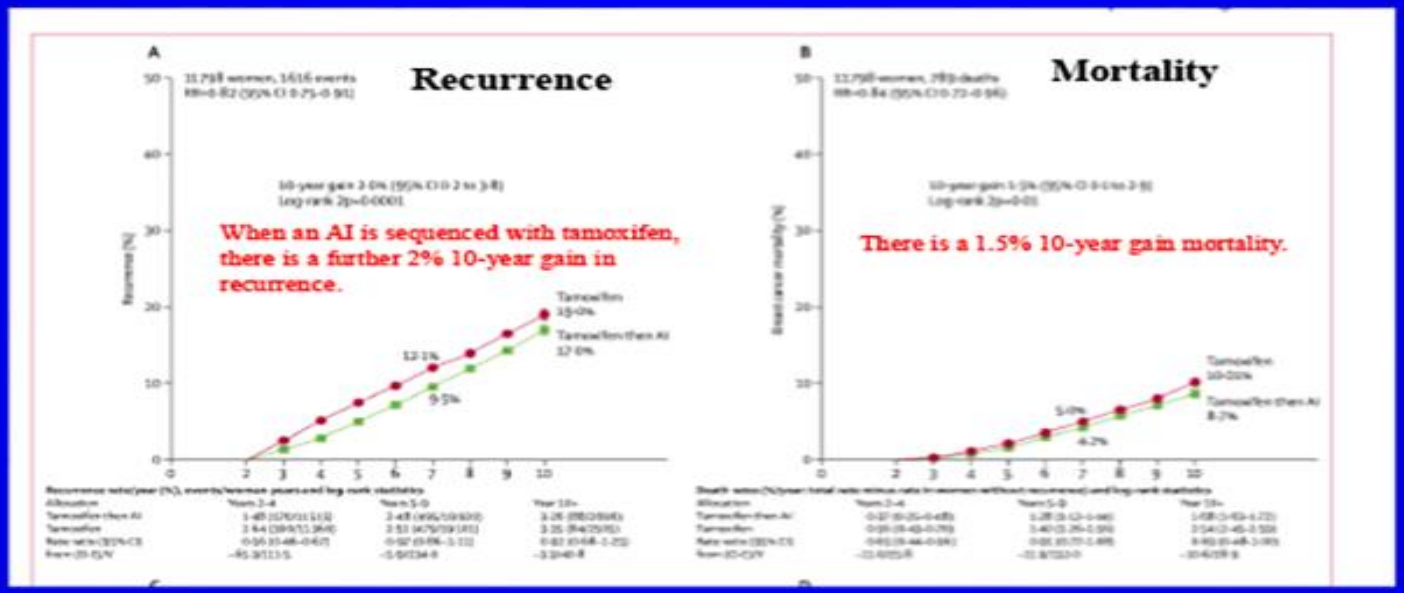


Figure 8: **About 5 years of tamoxifen versus not in ER-positive (or ER-unknown) disease: 15-year probabilities of recurrence and of breast cancer mortality**
10 386 women: 20% ER-unknown, 30% node-positive. Error bars are ±1SE.

Recurrence and Mortality

EBCTCG
Lancet, 2014

Tamoxifen followed by AI in Adjuvant Setting
Benefit of Sequencing Hormonal Therapies



Early Breast Cancer Trialists Collaborative Group, Lancet 2014

At this point it is worth mentioning:



Aromatase inhibitors remain the optimal endocrine therapy in post-menopausal women with HR+ early-stage breast cancer.

Additionally, in pre-menopausal women, two trials with long-term follow up data that matured in 2022 (SOFT and TEXT) demonstrated a benefit for ovarian suppression along with an aromatase inhibitor rather than tamoxifen alone.

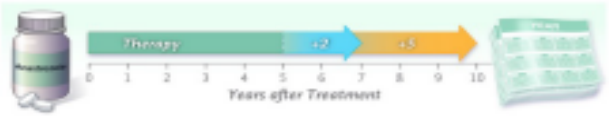
However, questions remain regarding the optimal management of HR+ disease in younger patients and in those who are high risk enough to justify chemotherapy and whether ovarian function suppression can be substituted for chemotherapy in some of those patients.

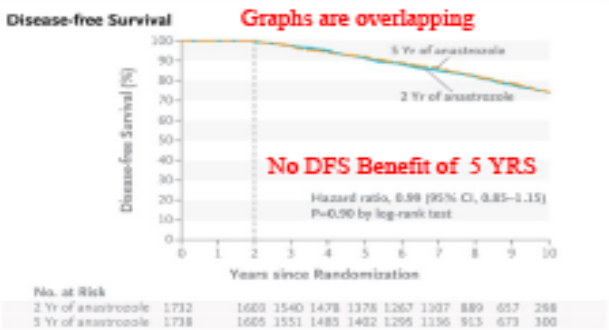
- **A meta-analysis was presented at the 2023 ASCO Annual Meeting included 15, 000 women from 23 trials and demonstrated a benefit of ovarian suppression regardless of receipt of chemotherapy.**

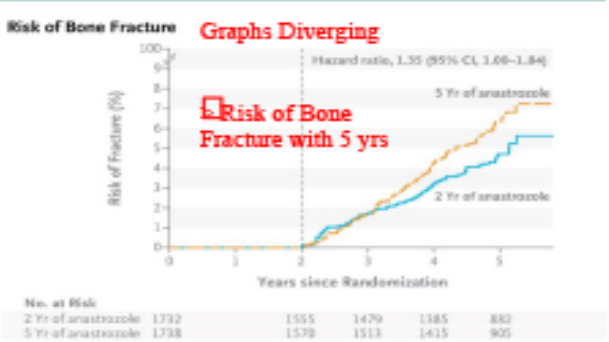
- **The study showed that women who did not receive chemotherapy or who remained pre-menopausal after chemotherapy had an almost 10% decrease in the risk of recurrence at 15 years when they received ovarian suppression, and they also had a significant improvement in breast-cancer related and overall survival.**

- **Patients who received chemotherapy and had an unknown menopausal status after treatment achieved only a minimal benefit of the addition of ovarian suppression.**

Aromatase inhibitor

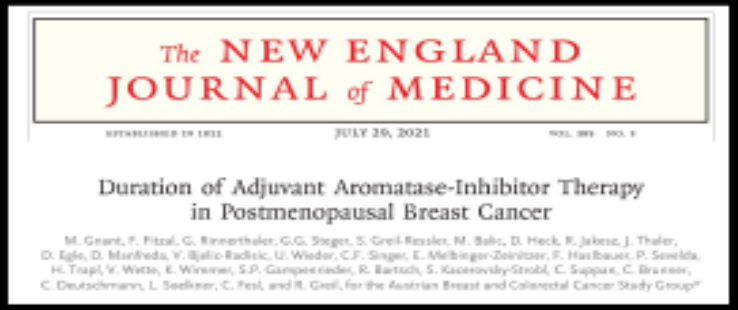






CONCLUSIONS

Postmenopausal women with hormone-receptor–positive breast cancer at average risk do not benefit from extending adjuvant aromatase-inhibitor therapy beyond a total of 7 years.



- In this prospective phase 3 trial, post-menopausal women with HR+ breast cancer, who had already received 5 years of adjuvant endocrine therapy were randomized to receive an additional 2 years (7 total) or an additional 5 years (10 total)
- The primary end-point was DFS

CONCLUSION:

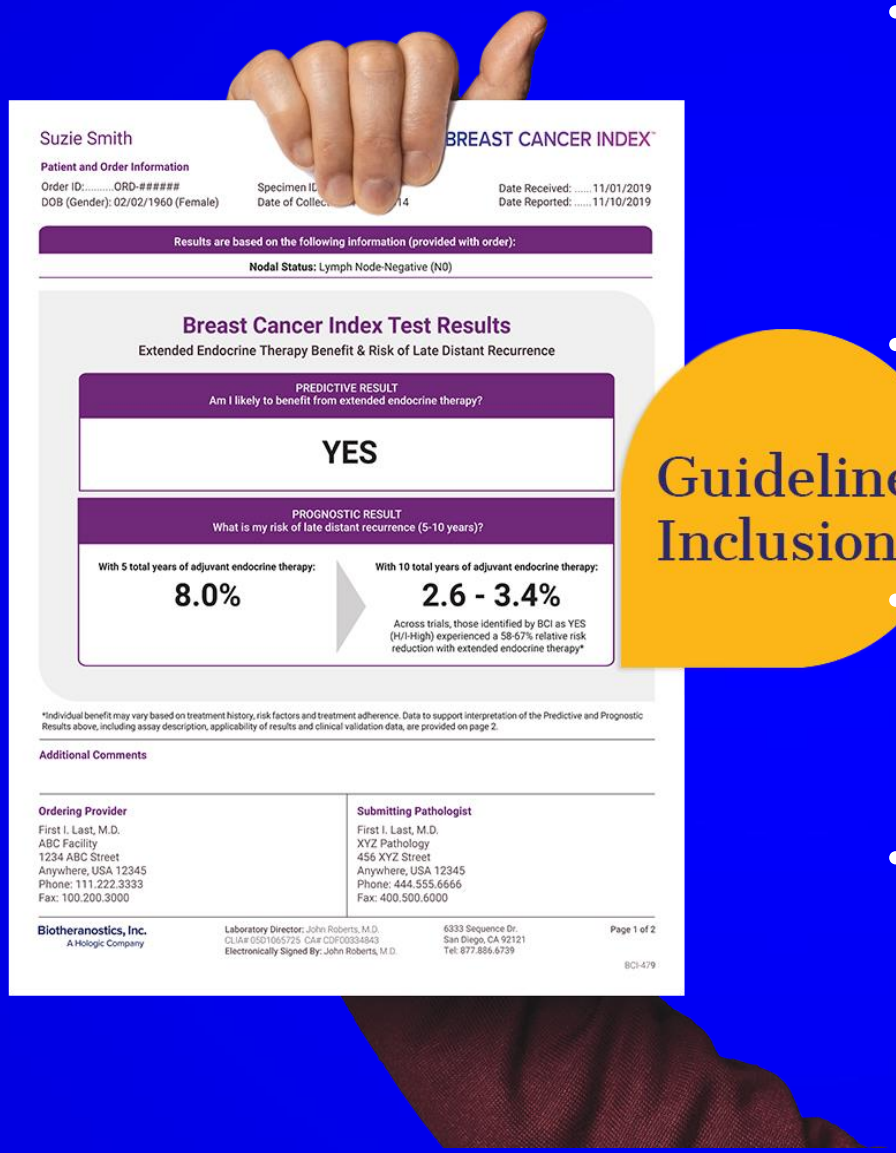
- Extending HR therapy by 5 years provided no benefit over a 2 year extension, but was associated with a greater risk of bone fracture.

Breast cancer index (BCI)

- **NCCN Clinical Practice Guidelines in Oncology** (NCCN Guidelines®) and the **American Society of Clinical(BCI Oncology®** (ASCO®) now recognize the Breast Cancer Index® (BCI) as the only genomic test that can predict the benefit of extended endocrine therapy in early-stage, HR+ breast cancer.
- That means avoiding potential overtreatment of patients for whom endocrine therapy beyond 5 years is unlikely to provide benefit, as well as informing treatment for the patients it may help.

"The HOXB13/IL17BR (BCI) ratio remains the only biomarker that has demonstrated significant treatment interaction for prediction of extended endocrine therapy benefit, earning guideline inclusion earlier this year."

Guideline inclusion



Guideline Inclusion

- Top part of report will give a simple YES or NO whether extended adjuvant therapy will benefit a patient.
- Bottom left indicates risk of late distant recurrence with 5 years of therapy
- Bottom right shows risk of late distant recurrence with 10 years of therapy.
- The BCI was also shown to be prognostic in premenopausal women with HR+ breast cancer enrolled in the SOFT trial. A low H/I ratio was predictive for the benefit of ovarian suppression.

Fertility



- Fertility preservation is a driving concern for many young women with breast cancer.
- Many of these women have HR+ breast cancer and are treated from 5-10 years with adjuvant endocrine therapy, which is known to compromise fertility.
- The early results of the POSITIVE Trial (reported NEJM March 2023) may be reassuring.
- In this international single arm trial, women were allowed to discontinue endocrine therapy for up to 2 years to attempt pregnancy.
- Results indicated that this appeared to be safe over short-term follow up (41 months), with 86% of those who became pregnant having at least one live birth, with a 3-year rate of recurrence of 8.9% (recurrence rate compared to "control" from SOFT and TEXT

Targeted Therapies

Targeted Therapies in Breast Cancer

Targeted Therapies in Breast Cancer

Targeted therapies work by blocking specific proteins, signaling pathways, or DNA-repair mechanisms that help cancer cells grow and survive. The most appropriate treatment depends on the tumor's biomarkers, stage, and previous treatments.

Summary chart

Breast cancer subtype / biomarker	Examples of targeted therapies	How they work
HER2-positive	Trastuzumab (Herceptin), pertuzumab, tucatinib	Block HER2 signaling or its activity, slowing cancer growth
HER2-positive	T-DM1 (ado-trastuzumab emtansine), T-DXd (trastuzumab deruxtecan)	Antibody–drug conjugates deliver a chemotherapy payload to cancer cells expressing HER2
HR-positive / HER2-negative	Palbociclib, ribociclib, abemaciclib	CDK4/6 inhibitors slow cancer-cell division; commonly combined with endocrine therapy
PIK3CA-mutated	Alpelisib, inavolisib	Target the PI3K signaling pathway, which can promote cancer growth
AKT1-mutated or PTEN-altered	Capivasertib	Blocks the AKT signaling pathway in selected advanced cancers
Germline BRCA1/BRCA2 mutations	Olaparib, talazoparib	PARP inhibitors interfere with DNA repair, making cancer cells more vulnerable
Triple-negative / Trop-2–expressing disease	Sacituzumab govitecan, datopotamab deruxtecan	Antibody–drug conjugates deliver a potent drug payload to cancer cells expressing Trop-2

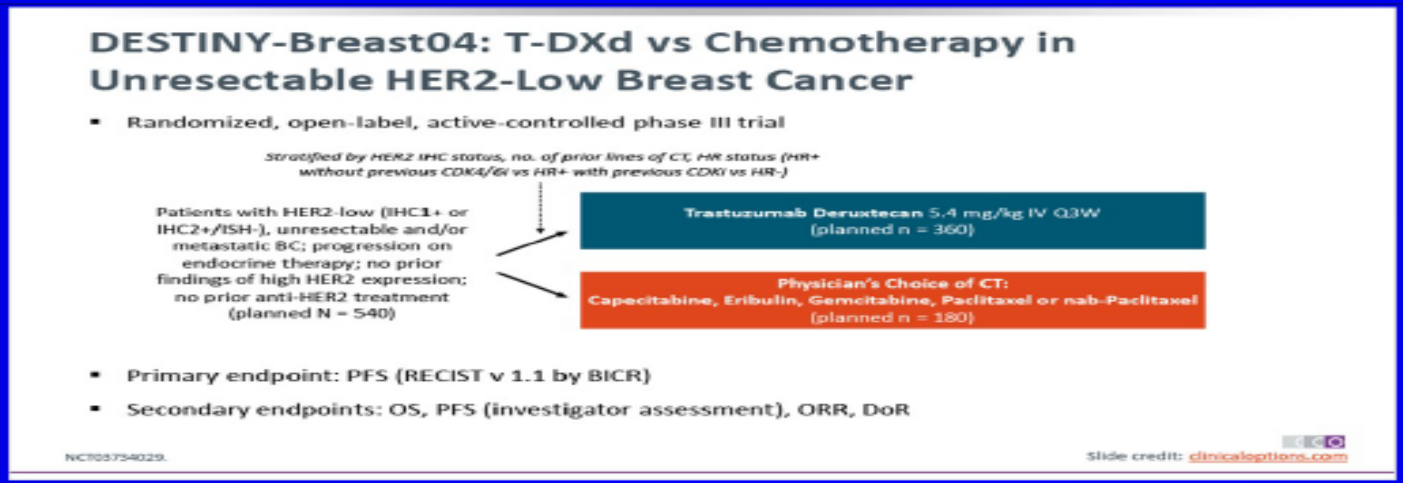
These are examples, not an exhaustive treatment list. Approved indications and combinations vary by disease stage, biomarker results, prior treatment, and current guidelines. Not every drug listed is appropriate for every patient.

New HER2 therapy

- FDA approved Enhertu (fam-trastuzumab-deruxtecan-nxki) for the treatment of patients with unresectable or metastatic HER2-low breast cancer subtype, which is a newly defined subset of HER2-negative breast cancer.
- Approximately 85% of new cases of breast cancer were previously considered to be HER2-negative. Of that proportion, about 60% of patients previously classified as HER2-negative subtype, can now be considered HER2-low.
- Prior to this approval, HER2-low patients received only endocrine therapy or chemotherapy.
- HER2-low is a new classification of the HER2 subtype that describes breast cancer that has some HER2 protein on the cell surface, but not enough to be classified as HER2-positive.



DESTINY trial



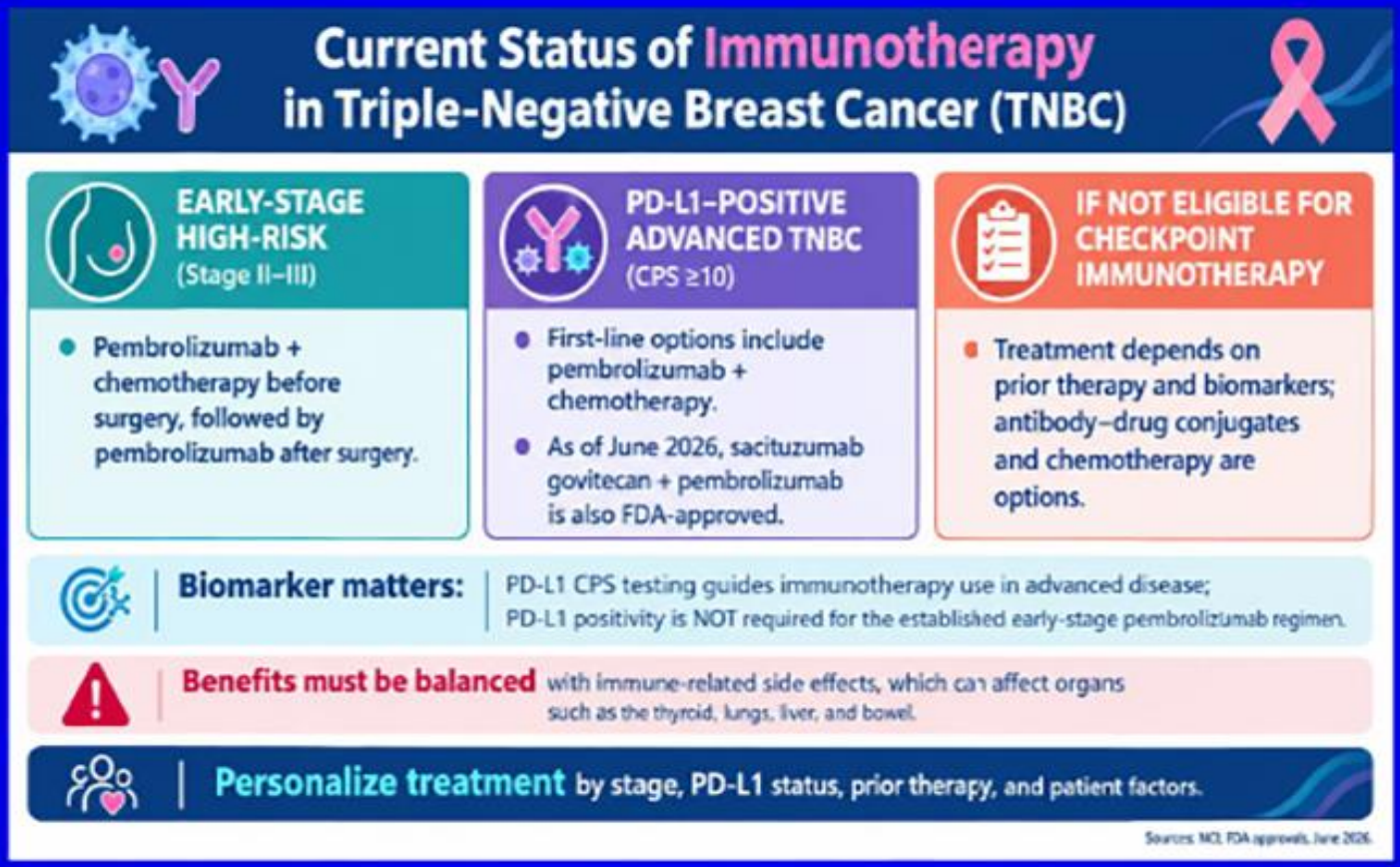
IHC 1+

OR

IHC2+/ FISH -

- Trastuzumab deruxtecan improved median PFS by 4.8 months and median OS by 6.6 months compared with standard single agent chemotherapy in this heavily pre-treated patient population.
- These data established a new standard of care for patients with HER2-low metastatic breast cancer.
- In addition to providing a new treatment option for patients with HER2-low disease, these findings also justify the shift in the way pathology laboratories report HER2 results,

Immunotherapy



Treatment

MYTH:

When treatment is over, you're finished with breast cancer.

FACT:

Breast Cancer can have long-term impact on people's lives and well-being.

- Patients often report that their family and friends expect them to move on after their primary treatment is completed.
- In reality, targeted treatments such as herceptin, tamoxifen, and aromatase inhibitors can go on for much longer, surgeries for those pursuing breast reconstruction can occur over several months, and for those with metastatic (stage IV) breast cancer, treatment will last for the rest of their lives.

Patients

- Patients can experience long-term physical side effects such as pain and tightness from surgeries, fatigue, neuropathy from previous chemotherapy, menopausal symptoms from either on-going endocrine therapies or the occurrence of early menopause due to certain chemotherapies, as well as other symptoms depending on treatment regimens.
- Also, Not To Be Forgotten are the long-term social and emotional effects the journey has taken on the patient.
- There is long-lasting anxiety, fear of recurrence, and relationship changes – among many, many impactful issues.
- As Physicians, we need to embrace the Bio-psycho-social Perspective on Medicine, and learn to treat the whole patient, and not just the disease.
- It is also our responsibility to help educate family and caregivers as to the needs of the patient, beyond the immediate care.
- We need to keep in mind that each patient's journey is unique, and we need to connect with our patients beyond simply prescribing chemotherapy.

Whole Person Health

The Utility of whole person Health in Breast Cancer Care



Thank you

